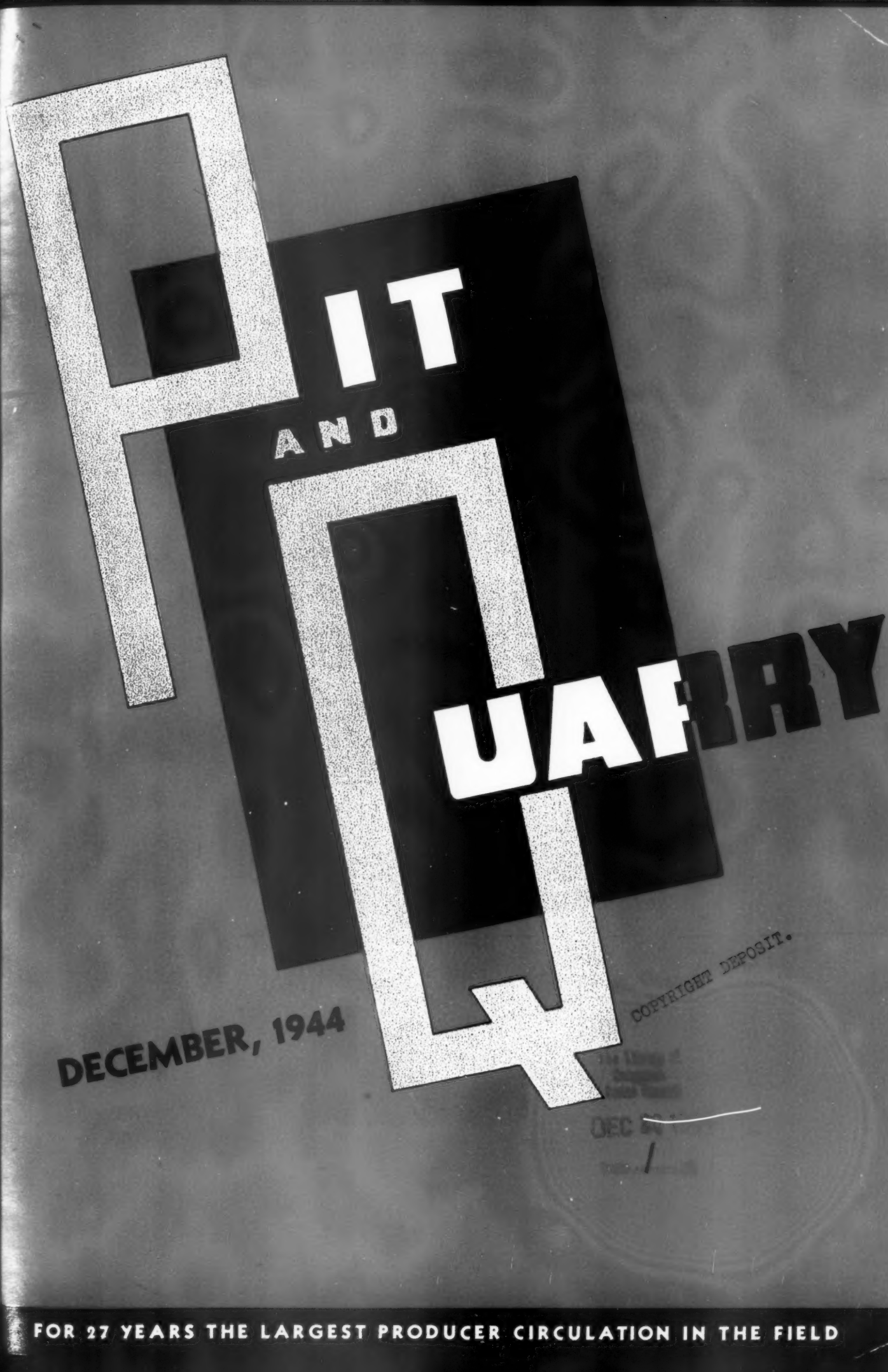


DECEMBER, 1944

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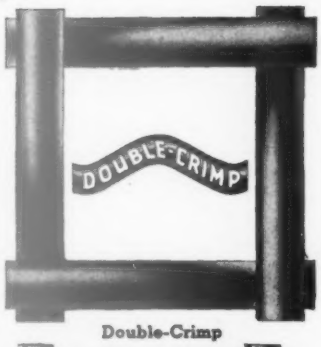
FOR 27 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

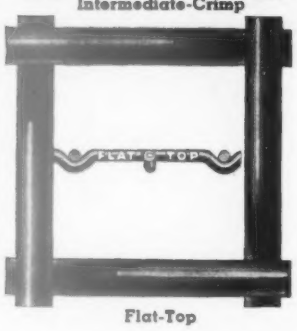
DEC 16 1944




Double-Crimp

Arch-Crimp

Intermediate-Crimp




Flat-Top

# "The Perfect"

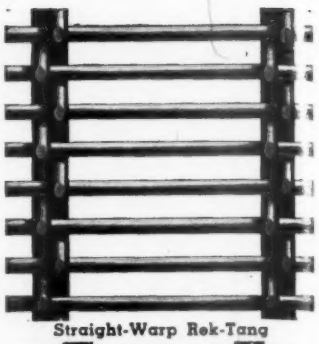
## Wire Cloths and Screens

of

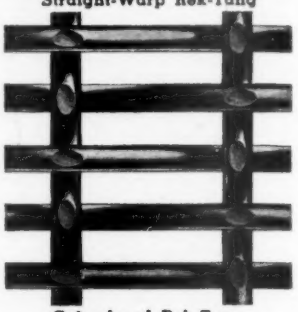
SUPER-LOY
STEEL
GALVANIZED STEEL
STAINLESS STEEL
NICKEL-CHROME STEEL
PHOSPHOR BRONZE
BRASS
COPPER
MONEL
NICKEL
ALUMINUM

•

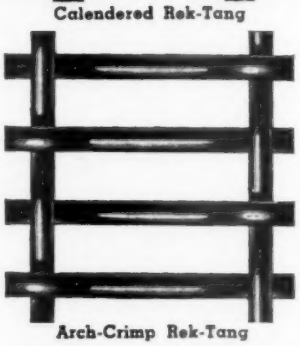
## Any Special Metal for Any Service



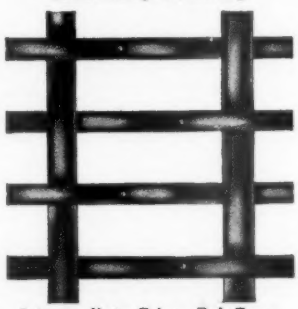
Straight-Warp Rek-Tang



Calendered Rek-Tang



Arch-Crimp Rek-Tang



Intermediate-Crimp Rek-Tang

### "Perfect" WEAVES

ARCH-CRIMP
Coiled
DOUBLE-CRIMP
Double-Fill
Dutch
FLAT-TOP
INTERMEDIATE-CRIMP
REK-TANG
Selvage-Edge
STRAIGHT-WARP
Stranded
STA-TRU
Triple-Warp
Twilled
Twisted-Fill
Twisted-Warp

### "Perfect" PROCESSING

Arc-Welding
Bending
Binding
Brazing
CALENDERING
Coiling
Crimping
Cutting
Dipping
Dishing
Finishing
Flanging
Flattening
Forming
Framing
Galvanizing
Jointing
Knuckling
Painting
Rolling
Selvaging
Shaping
Shearing
Slitting
Soldering
Spot-Welding
Squaring
Stitching
Tack Welding
Trimming

### "Perfect" PRODUCTS

Baskets
Circles
Coils
Cones
Cylinders
Discs
Forms
Leaves
Lengths
Panels
Pieces
Ribbons
Rings
Rolls
Sections
Segments
Strips
Templates

*Illustrations show items listed in capitals. Other wire cloths and screens will be illustrated in subsequent advertisements of this series.*

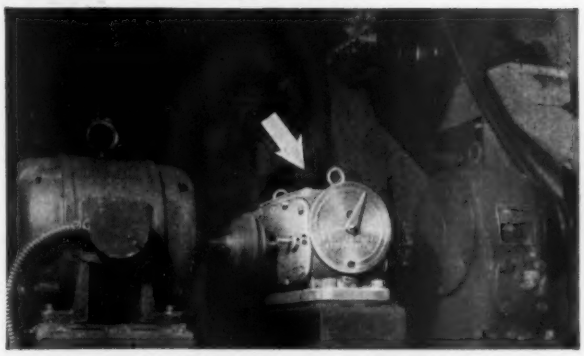
Sta-Tru

# LINK-BELT

MATERIALS HANDLING AND POWER TRANSMISSION MACHINERY

## SERVES THE ENTIRE INDUSTRY

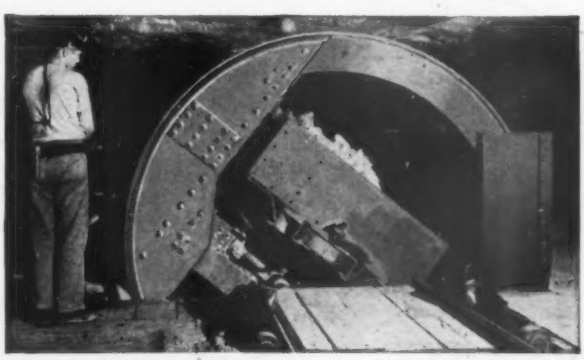
**BELT CONVEYORS** perform a very important job at this mine in keeping zinc-lead ores "on the move." Link-Belt designs offer the best in belt conveyor equipment.



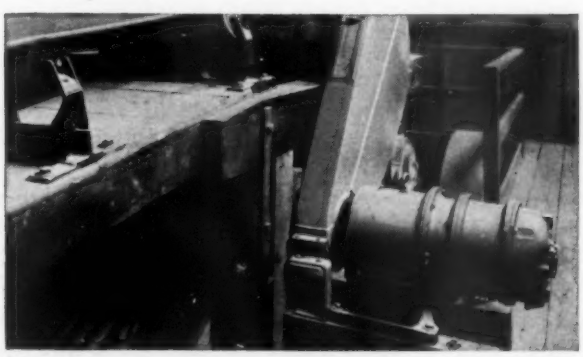
**P.I.V. GEAR VARIABLE SPEED CHANGERS** accurately control speeds of conveyors, feeders, ball mills, etc.

**VIBRATING SCREENS** assure high efficiency and low-cost operation on both liquid and dry screening applications.

**SORTING-TABLE FEEDER-CONVEYOR** handling ore from mine to crusher—one of the many types of Link-Belt Feeders in service in the mining industry.



**ROTARY MINE CAR DUMPER** on 900-ft. level dumping a 6-ton ore car into bin over primary crusher.



**MOTORIZED SPEED REDUCER** and **ROLLER CHAIN DRIVE** operating head shaft of belt conveyor.

**LINK-BELT EQUIPMENT INCLUDES:** Complete Sand, Gravel and Stone Washing Plants . . . Ready-Mixed Concrete Plant Equipment . . . Lime Handling Equipment . . . Screens (vibrating, rotary and conical) . . . Washers and Classifiers, of the screw, log, flight, Shaw and conical types . . . Dewatering Rotoscoops and Screw Conveyors . . . All Types of Elevators and Conveyors . . . Roto-Louvre Dryers and Coolers . . . Skip Hoists . . . Car Spotters and Haulage Systems . . . Portable Conveyors and Bucket Loaders . . . Silent and Roller Chain Drives . . . Speed Reducers . . . Variable Speed Transmissions . . . Chains (Malleable Iron, Promal and Steel) . . . Sprockets . . . Elevator Buckets . . . Gears . . . Clutches . . . Couplings . . . "Friction Fighter" Self-Aligning Ball and Roller Bearing Units . . . Babbitted Bearing Units, etc.

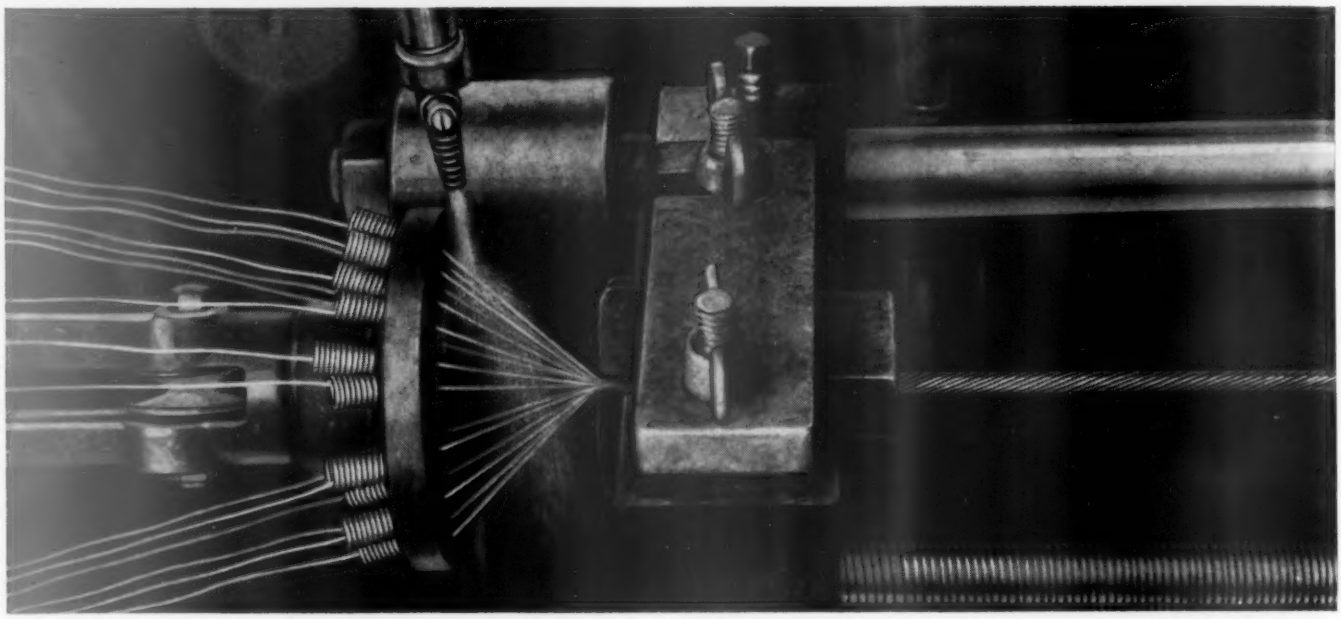
9534-C

As specialists in the design, manufacture and application of materials handling and power transmission machinery for all industry, Link-Belt engineers have learned how to apply an extensive knowledge and experience, effectively, to the solution of all kinds of materials handling and power transmitting problems. Because Link-Belt makes many types of conveyors, chains and power transmitting machinery, we can be of incalculable service in recommending the equipment most certain to aid in attaining efficient production.

**LINK-BELT COMPANY** Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices in principal cities.


PIT AND QUARRY, December, 1944. Vol. 37, No. 6. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 25 cents. Entered as second-class matter February 23, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

# The Lubricant Bath that makes Upson-Walton Wire Rope give Better Service



EVERY wire in any length of Upson-Walton wire rope —and there may be 200 or 300 of them—is a *live* wire in the sense that *all are in motion when the rope is operating.* Every time the rope flexes, every wire in it moves.

Upson-Walton pre-lubrication therefore is of crucial importance to:

1—Prolong the life of the rope

2—Retard corrosion

3—Reduce friction within the rope itself and thereby prevent excessive wear, wire on wire and strand on strand.

Every foot of Upson-Walton wire rope is subjected to a pressure bath of lubricant, actually built into the rope in manufacture. By this method (illustrated above), every wire in every strand is surrounded with lubricant; every void between strands is a reservoir of lubricant and the core itself is *saturated* with lubricant.

The practical effect of pre-lubricating, as performed by Upson-Walton, is this:

1—It permits a better balanced loading of the rope.

2—Weight is distributed more equally between *all* wires; no one wire bears an excessive share of the load.

3—Every wire helps hold the load by easily slipping into the position where it helps the most.

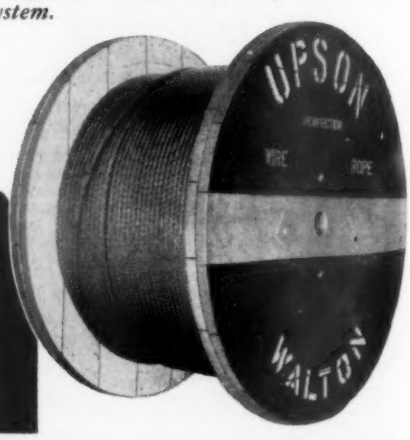
4—The rope can develop its full maximum strength and sustain greater loads than rope which might not be as efficiently pre-lubricated.

It pays to specify Upson-Walton wire rope—*with the built-in lubrication system.*

U-W

Established 1871

***Upson-Walton also manufactures wire rope clips, thimbles and sockets; tackle blocks, snatch blocks, turnbuckles and shackles***




## THE UPSON-WALTON COMPANY

*Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks*

NEW YORK • PITTSBURGH • CLEVELAND • BUFFALO • CHICAGO

# Order NOW

## TO PRODUCE AIR MORE CHEAPLY FOR PLANT IMPROVEMENT, EXPANSION, OR RECONVERSION

YOU may want an air compressor *quick* — for plant improvement, or expansion, or reconversion. If so, let's get together now.

Your Cooper-Bessemer Compressor is not a puny "war model", designed as a stop-gap or built for the emergency. It produces air at rock-bottom cost. Every machine we ship, now or after Victory, is as dependable as the best we've ever made. It's the same top-quality, time-proven construction that's piling year upon year of uninterrupted, satisfactory performance for our compressors in such vital fields as gas transmission, petroleum refining, synthetics and the process industries. Powered by a rugged, efficient, economical G-MV engine, either gas or diesel fueled — or motor driven, if you prefer.

We're taking orders today for compressors and engines. Our plants face no reconversion problems. We are ready to serve private industry in 1944.

Let us help you make a start on your re-equipment problem now. We'll be glad to have a representative sit down with you at your convenience, to determine what models best serve your needs, and get your compressors and engines earmarked in advance on our 1944 delivery program. Today is not too early.

**THE Cooper-Bessemer CORPORATION**

Mt. Vernon, Ohio • Grove City, Pa.

BUILDERS OF DEPENDABLE ENGINES FOR 111 YEARS

# HOW A B-G BUCKET LOADER HELPS HANDLE AGGREGATES FASTER AND CHEAPER

THIS versatile Barber-Greene Bucket Loader is a valuable job-coordinating unit in pit and quarry.

You can save money by processing aggregate at a uniform rate, even during "off" seasons, and storing it in stockpiles.

A Barber-Greene will reload it into trucks, whenever needed, at exceptionally low cost. In fact, many operators have found that the saving in truck time alone justifies its purchase.

Continuous handling by the B-G Loader is extremely advantageous in feeding material to processing equipment — screens, crushers, belt conveyors.

The B-G Bucket Loader also can be used for stripping, light excavating, screening, and many other cost-saving applications.

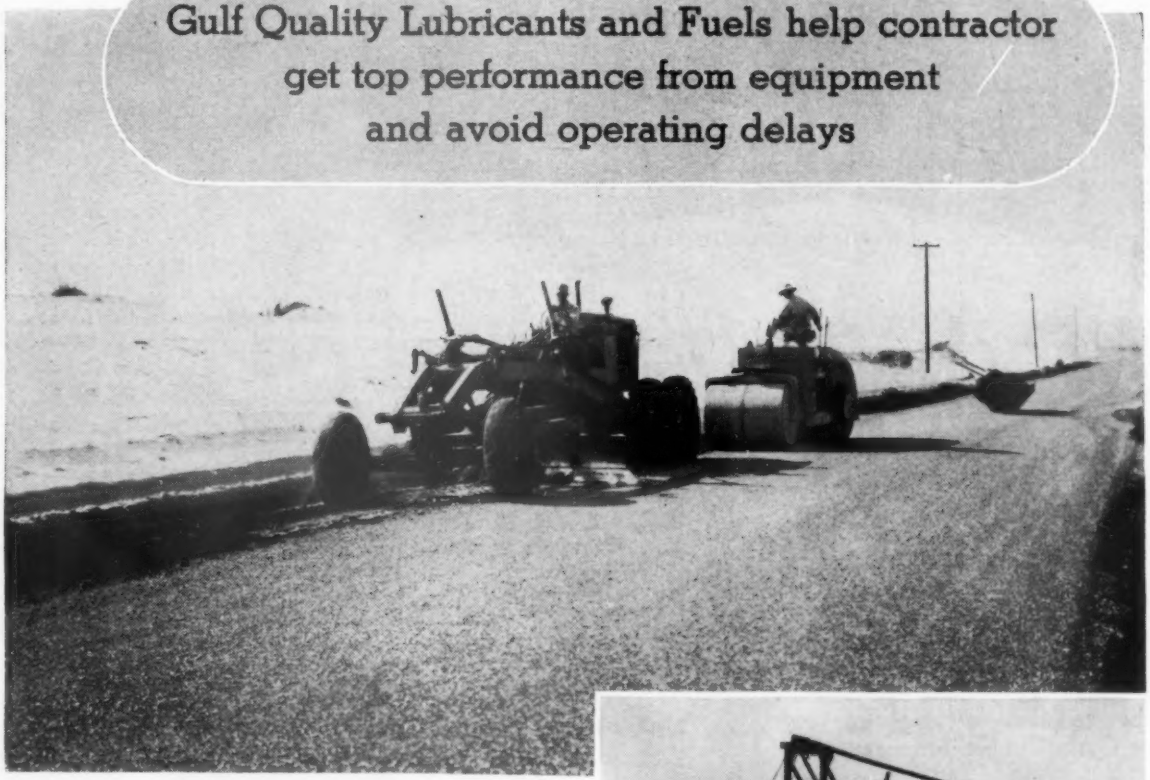
Full crawler mounting, tank type chassis, automatic overload release, synchronized spiral feeding, floating boom, centralized control, and 12 crowding speeds are but a few of the advanced mechanical features that give the B-G Loader long life and fine performance under the rigors of heavy, steady work. Consult your B-G representative or write the Barber-Greene Company, Aurora, Illinois.

44-28

**Barber-Greene** B G *Constant Flow Equipment*

# Airport road project 2 weeks ahead of schedule—

## Gulf Quality Lubricants and Fuels help contractor get top performance from equipment and avoid operating delays



James H. Craggs Construction Company, Ocala, Florida, is 2 weeks ahead of schedule in grading and paving roadway between Fernandina Beach and Fernandina Airport, Florida. Grading involved 90,000 cu. yds. of earth. Gulf quality petroleum products used on this job include Dieselube H. D., Transgear Lubricant E. P., Solar Fuel Oil and Good Gulf Gasoline.

OUR equipment has made an outstanding record on this job with Gulf lubricants and fuels in service—one of the important reasons we're 2 weeks ahead of schedule," says Superintendent R. V. Fitzgerald. "Proper lubrication and efficient fuel performance have helped us get the most out of each unit and avoid operating delays—which means more work done on every shift."

The progress and profit on any dirt-moving or paving job depend to a large extent on the efficiency of the equipment that does the work. That is why many leading contractors use Gulf quality lubricants and fuels as basic job insurance—they know from experience that equipment performs better, stays on the job longer, and operates at lower expense for maintenance.

Gulf quality lubricants and fuels are quickly available to you through more than 1200 warehouses located in 30 states from Maine to New Mexico. Write, wire, or phone your nearest Gulf office today.

GULF

**GULF OIL CORPORATION**
**GULF REFINING COMPANY**
GULF BUILDING, PITTSBURGH 30, PA.

# Here are 5 TYPES of GATES V-BELTS

## ONE of these five types Will Fit Any Need You Have!

Whenever a drive in your plant is wearing out belts faster than it should—or is giving any other trouble—just *pick up your phone* and call the Gates Rubber Engineer.

He can quickly analyze your problem and, in most cases, he can correct the trouble very easily without needing to specify the use of any special-structure belts.

There *are* service conditions, however, under which a V-Belt of special construction can most profitably be used—and your Gates Rubber Engineer can then supply a Gates V-Belt that is precisely engineered to meet the unusual conditions.

**The Gates V-Belt of special synthetic rubber is a notable example. As a result of specialized research, Gates developed this synthetic rubber V-Belt and began supplying it in large quantities to industry more than six years ago. Under severe conditions of heat and oil, this Gates special synthetic V-Belt actually outwears any natural rubber belt by as much as 230%.**

In your particular application, V-Belts with tension members composed of flexible steel cables

4412

—or of rayon cords—may prove to be the most efficient and economical. Again, Gates Static-Safety V-Belts may best fit yur special need.

In any case, the wisest move you can make is to phone the Gates Rubber Engineer. (Just look under "Gates Rubber" in your phone book.) He will come right to your plant—will thoroughly analyze any drive problem you may have—and he will always recommend the practice that will be most efficient and economical for you.

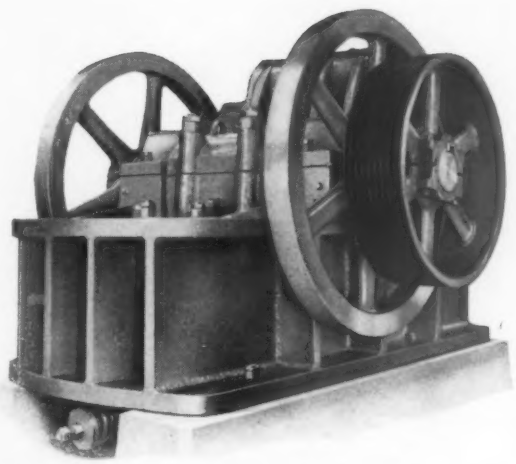
## THE GATES RUBBER COMPANY

*Engineering Offices and Stocks in All Large Industrial Centers*

# GATES VULCO ROPE DRIVES

**CHICAGO** 6, **ILL.** 549 West Washington
**NEW YORK CITY** 3. 215-219 Fourth Avenue
**ATLANTA** 3. **GA.** 738 C & S National Bank Building
**LOS ANGELES** 21. **CAL.** 2240 East Washington Boulevard
**DENVER** 17. **COLO** 999 South Broadway
**DETROIT** 4. **MICH.** 8663 Grand River Avenue
**PORTLAND** 9. **ORE.** 333 N W 5th Avenue
**DALLAS** 2. **TEXAS** 1710 N Market Street
**SAN FRANCISCO** 3. **CAL.** 1090 Bryant Street

# THREE GREAT CRUSHERS



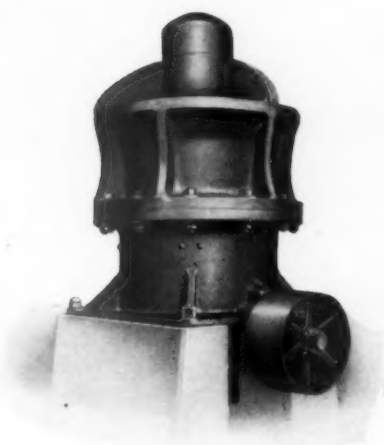
The Traylor Type H Jaw Crusher is a modernized Blake Crusher having (1) a heavy steel plate FRAME, scientifically welded into a single piece; (2) a new and simple SWING JAW SUSPENSION and (3) manganese steel CURVED JAW PLATES, which crush finer in greater capacity, at no extra cost.

For complete details, see our Bulletin No. 2105.

The Traylor Type TY Reduction Crusher is a medium fine reduction crusher that has four characteristics,—(1) Facility to deliver the kind of product required, in the capacity desired; (2) Strength to stand up under its job; (3) Economy of operation and maintenance; (4) Foolproofness.

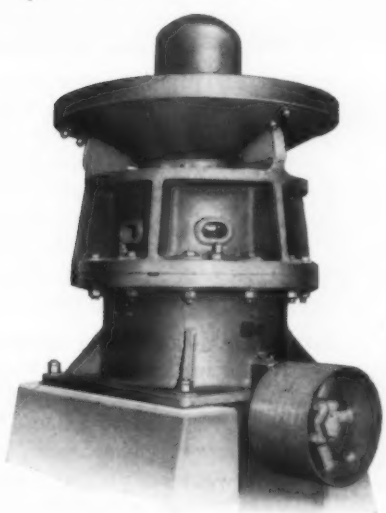
STRENGTH is supplied by the all-steel construction; ECONOMY of operation and maintenance are assured by the patented non-chokable Bell Head and Curved Concaves; the machine is FOOLPROOF by automatic lubrication, and dust protection.

See our Bulletin 3112 for full details and table of sizes.



The Traylor Multi-Stage Fine Reduction Crusher could be considered, in a sense, two TY machines superimposed in one frame. In act, the effect is of THREE machines, — a SIZING CRUSHER, a FEEDER and a FINE REDUCTION CRUSHER, because the upper stage SIZES the material and FEEDS it to the lower or finishing stage in exactly the right quantity, evenly distributed.

See our Bulletin 1113 for details.



## WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

This trio of crushers forms a team that will deliver crushed product of all sizes, down to 5/16" and smaller, at the lowest possible cost, and the range of sizes of each machine is such as to meet almost any requirement. The Type H is built in sizes from 8" x 12" to 42" x 48"; the Type TY in sizes from 1'-3" to 5'-6"; and the Multi-Stage in sizes from 1'-8" to 4'-0".

# TRAYLOR

## ENGINEERING & MANUFACTURING CO.

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SALT LAKE CITY
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LOS ANGELES
919 Chester Williams Bldg.

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S. 2707 Rhyolite Rd.

B. C. EQUIPMENT CO., LTD.
551 Howe St., Vancouver, B. C.

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Atlanta, Ga.

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Indiana Equipment Co., Inc.
327 W. Market St.
Indianapolis, Ind.

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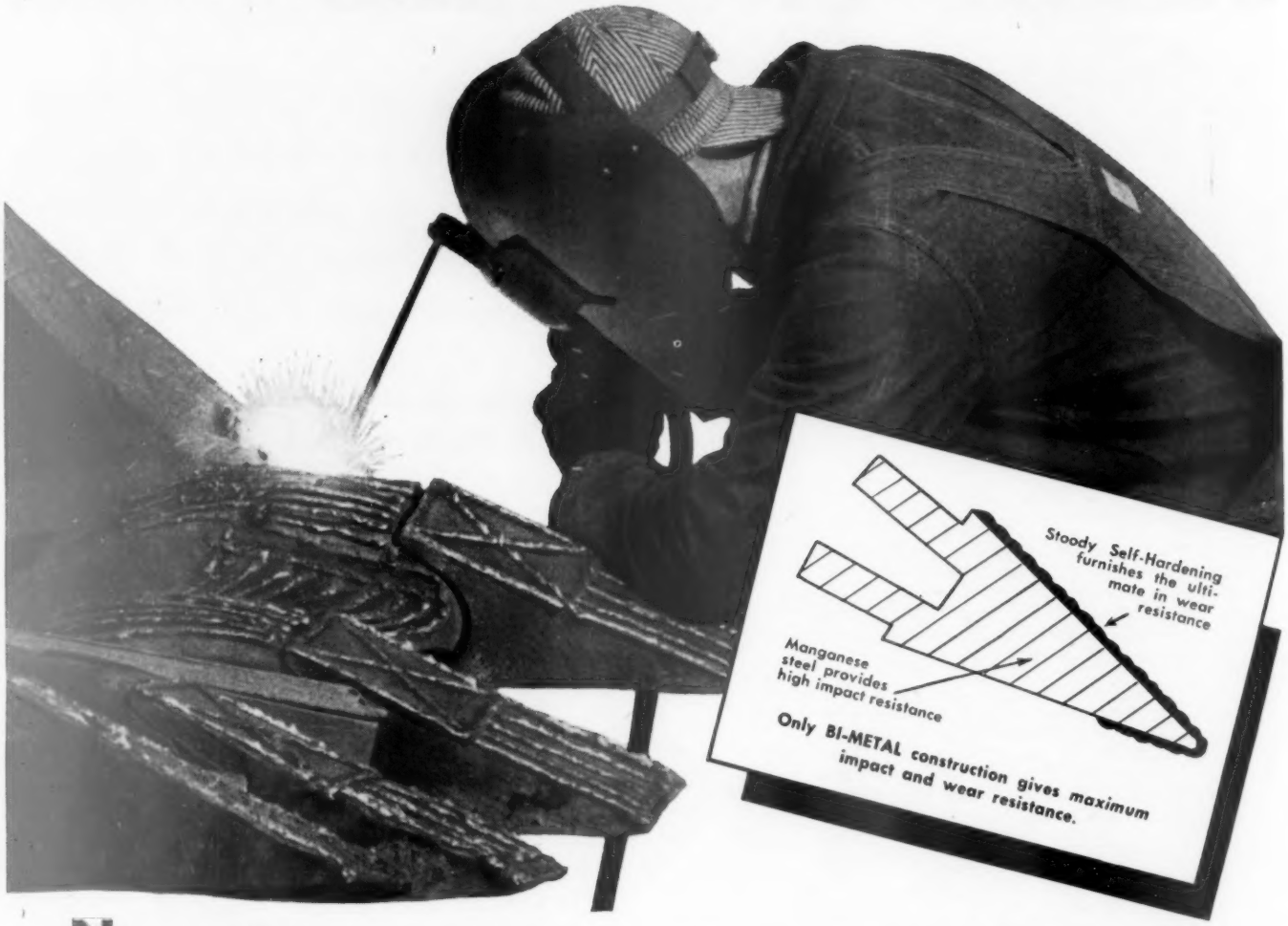
New Haven, Conn.

Roy C. Whayne Supply Co.
Cor. 8th & Main
Louisville, Ky.

# BI-METAL CONSTRUCTION
## Means Longer Life on Shovel Parts


Stoody Self-Hardening furnishes the ultimate in wear resistance
Manganese steel provides high impact resistance
Only BI-METAL construction gives maximum impact and wear resistance.

**NO SINGLE METAL has *both* maximum hardness to resist wear and maximum ductility to withstand impact. Either can be obtained only at the expense of the other and generally, where both impact and wear resistance are required, a compromise between the two must be accepted. This is true of the manganese steel employed for bucket lips, runners, etc.**

Stoody Self-Hardening over those areas receiving greatest abrasion offers the ultimate in both impact and wear resistance by providing BI-METAL CONSTRUCTION. The manganese parent stock provides high *impact resistance*. Stoody Self-Hardening *furnishes extreme wear resistance*—considerably greater than obtainable with either manganese or high carbon electrodes.

Stoody Self-Hardening is a natural for use on shovel parts—it is easy to apply and forms a strong bond with manganese steel. Stoody Self-Hardening is not only extremely wear resistant, but will not chip even under severe impact. To equalize wear over an entire bucket surface, it is necessary only to hardface those areas receiving greatest abrasion. By controlling spot wear alone, you lengthen shovel life many times and save down time for routine repairs.

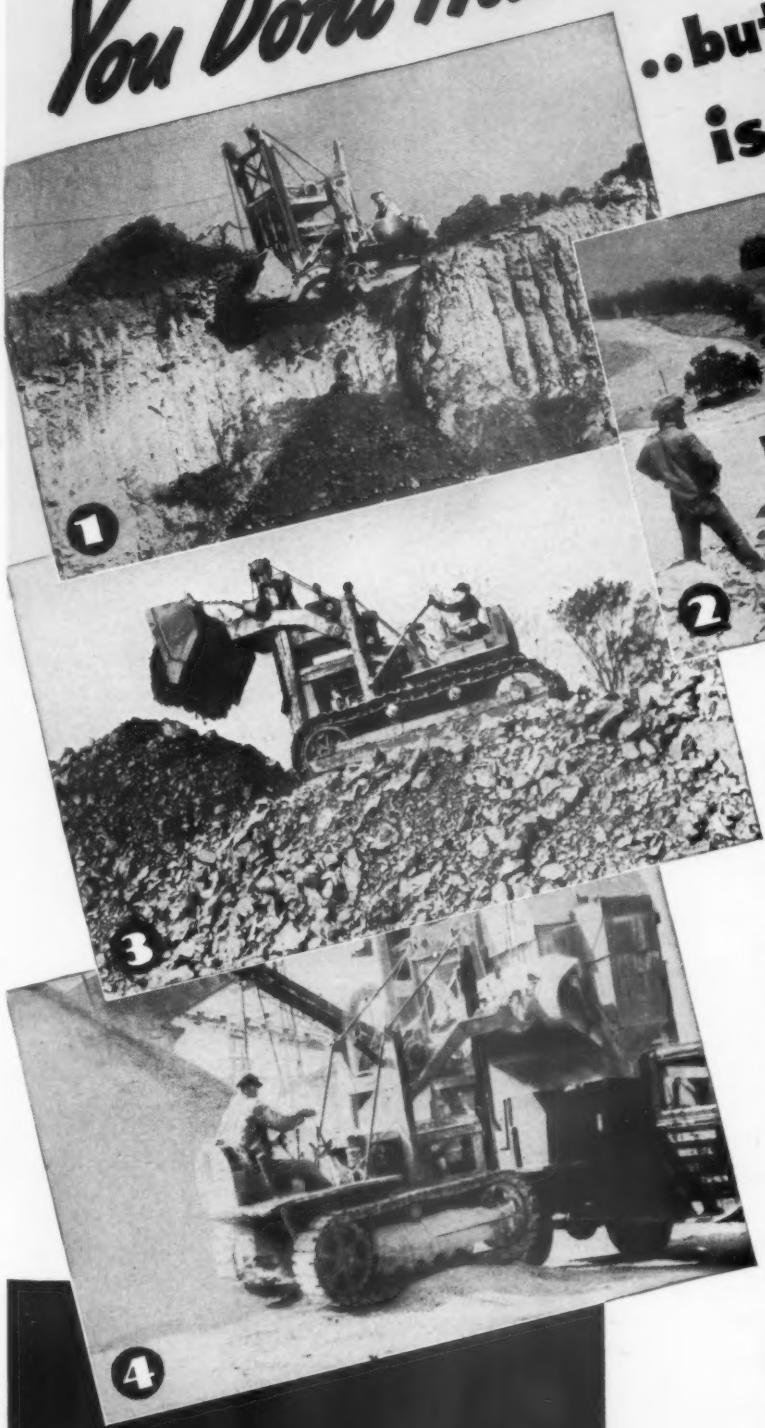
**Stoody Self-Hardening is available in both bare and coated rods for D.C. electric application and can be purchased from 600 U. S. distributors. 3/16" and 1/4" diameter rods are priced at 50c per lb. f.o.b. Whittier, California, or distributors' warehouses. Try Stoody Self-Hardening on your next shovel repair and note the increased life from these hard-faced bucket parts.**

**STOODY COMPANY**
1126 W. SLAUSON AVE., WHITTIER, CALIF.

*Distributed in Canada by:*
G. D. PETERS & CO., LTD, Montreal and Toronto
GORDON & BELYEA, LTD., Vancouver, B. C.

**STOODY HARD-FACING ALLOYS**
*Retard wear . . . Save Repair*

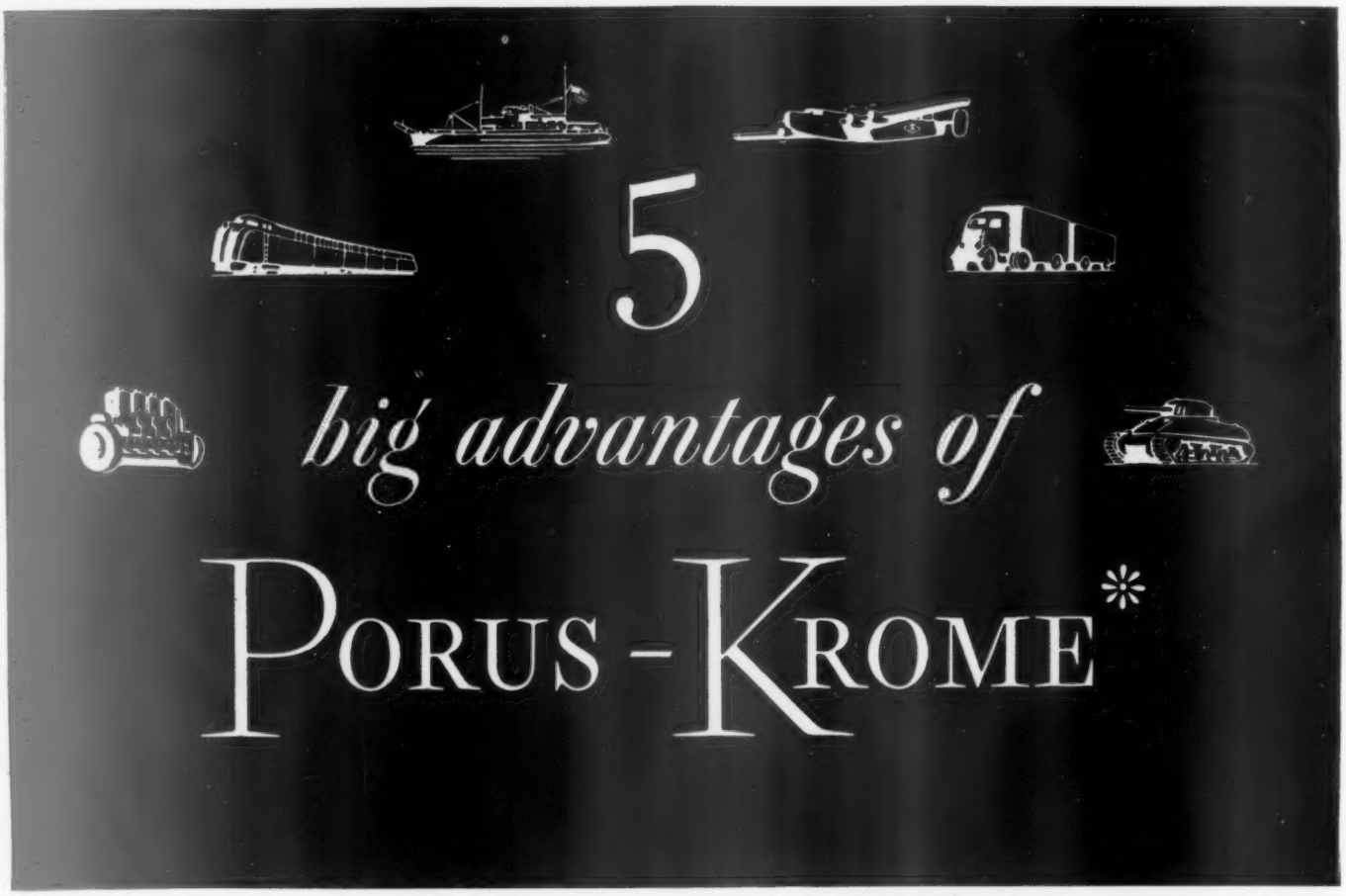
# You Don't Have to Baby 'Em ..but PROPER CARE is GOOD BUSINESS!



1. STRIPPING overburden with T4 TRAXCAVATOR at a California Quarry.
2. LOADING trucks with quarry rock with a Model T4 TRAXCAVATOR.
3. STOCKPILING limestone with big 2½—yard Model T7 TRAXCAVATOR.
4. MATERIAL HANDLING is a fast, flexible operation with the ½ yd. Model T2 TRAXCAVATOR.

**TRAXCAVATORS are built for hard, continuous work and will give long service with ordinary care. Records of machines on toughest jobs prove this fact, but service records likewise prove that proper lubrication and maintenance pay big dividends in longer life and lower net cost of operation. Especially in these times, when new machines are scarce and replacement parts are not always too easily obtained, it is wise to give special thought and action to maintenance. Have your Trackson-"Caterpillar" dealer inspect your TRAXCAVATORS and other TRACKSON Tractor Equipment to see that they are ready for the busier days ahead. Should you need another parts or instruction manual, ask your dealer, or write direct to TRACKSON COMPANY, Milwaukee 1, Wisconsin.**

**TRACKSON**
**TRACTOR EQUIPMENT**




1 PORUS-KROME applied to the cylinder walls of gasoline and Diesel engines multiplies the life of the cylinders from 4 to 20 times.

2 PORUS-KROME on the cylinder walls multiplies the life of the ordinary piston rings from 3 to 5 times.

3 PORUS-KROME, with its thousands of tiny pores and channels which hold lubricating oil and feed it back as needed, improves lubrication and holds lubricating oil consumption at a constant low level.

4 PORUS-KROME and piston rings wear so slowly that high power development is maintained for many more hours . . . many more miles . . . than with ordinary cylinders.

5 PORUS-KROME means greater engine reliability because it reduces scoring and scuffing and the risk of piston seizure and because it cuts down the number of overhauls caused by cylinder and ring wear.

***All of these advantages add up to a substantial saving in engine operating costs.***

VAN DER HORST

U. S. PATENTS 2,048,578 AND 2,314,604

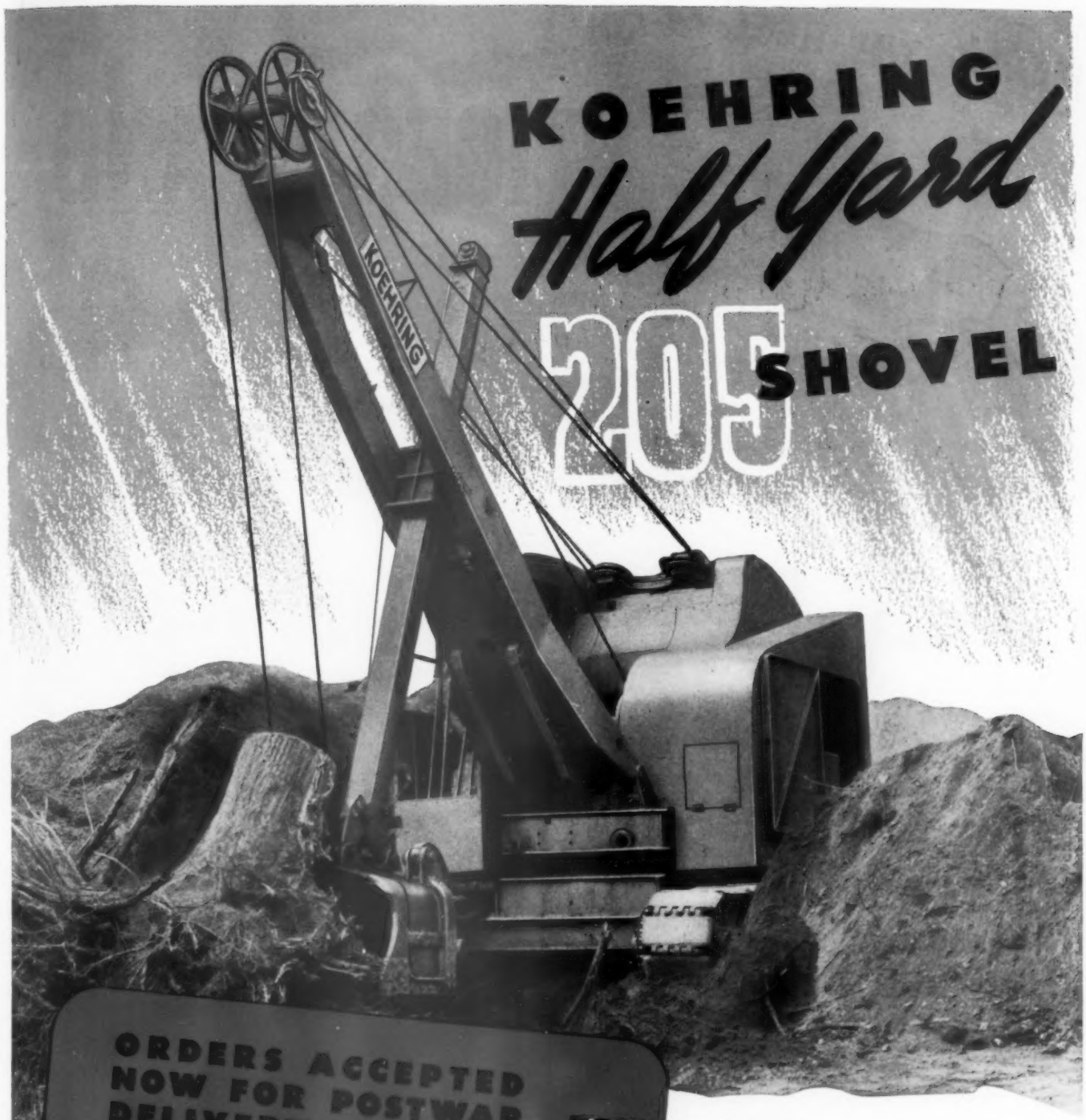
# PORUS - KROME

*Good for the Life of your Engines*

*PORUS-KROME is pure, hard chromium which is applied to cylinder bores by the patented Van der Horst process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil, feeding it back as needed. It reduces corrosion and wear and multiplies cylinder life 4 to 20 times.

**VAN DER HORST CORPORATION OF AMERICA** OLEAN • NEW YORK CLEVELAND 11 • OHIO

AN AFFILIATE OF DRESSER INDUSTRIES




**ORDERS ACCEPTED NOW FOR POSTWAR DELIVERY**

**WRITE TODAY FOR DESCRIPTIVE BULLETIN**

*Use the Coupon . . .*

KOEHRING COMPANY, Dept. P,
3026 West Concordia Ave.,
Milwaukee 10, Wisconsin.

Please send New 205 Shovel Bulletin

Firm Name_____

Individual Name_____ Title_____

Street Address_____

City_____ Zone_____ State_____

KOEHRING HEAVY DUTY

ARMY E NAVY

**HEAVY-DUTY CONSTRUCTION EQUIPMENT**

HERE'S THE REEL McCOY...

# TIGER BRAND

## —when you want superior wire rope

THERE are four good reasons why you can be sure of getting the utmost in quality and performance when you use AMERICAN TIGER BRAND WIRE ROPE.

*First*—all the steel used in TIGER BRAND is produced in our own mills and is quality-controlled in every step, from the ore to the finished product.

*Second*—the wire itself is drawn and stranded by the most modern methods and on the finest equipment anywhere available.

*Third*—into every foot of TIGER BRAND goes the knowledge and skill gained by more than 100 years of wire making.

*Fourth*—when our wire rope engineers recommend a particular type of TIGER BRAND for your service, there is no guessing involved. From practical experience, gained in the field, they know how the rope should act on your equipment and exactly what rope is safest and most economical for the service.

TIGER BRAND WIRE ROPE has proved its ability to deliver the goods in all sorts of service, under all kinds of conditions. So when you need wire rope—and want the best—get in touch with your distributor and ask for TIGER BRAND. The chances are getting better that he may be able to supply you.

**AMERICAN STEEL & WIRE COMPANY**
*Cleveland, Chicago and New York*
**COLUMBIA STEEL COMPANY**
*San Francisco*
United States Steel Export Company, New York

USS *Excellay Preformed*

UNITED STATES STEEL

# PROVED ON OVER 400 UNITS

## The ball-bearing principle of grinding on B&W Direct Firing Pulverizers

The ball-bearing principle of grinding combines crushing and attrition under controlled pressure. It produces the fineness of fuel necessary for efficient combustion at all rates of operation. This principle of grinding permits a wide range in size of pulverization and conditions of operation. The pulverizer is moderate in space requirement per unit of capacity.

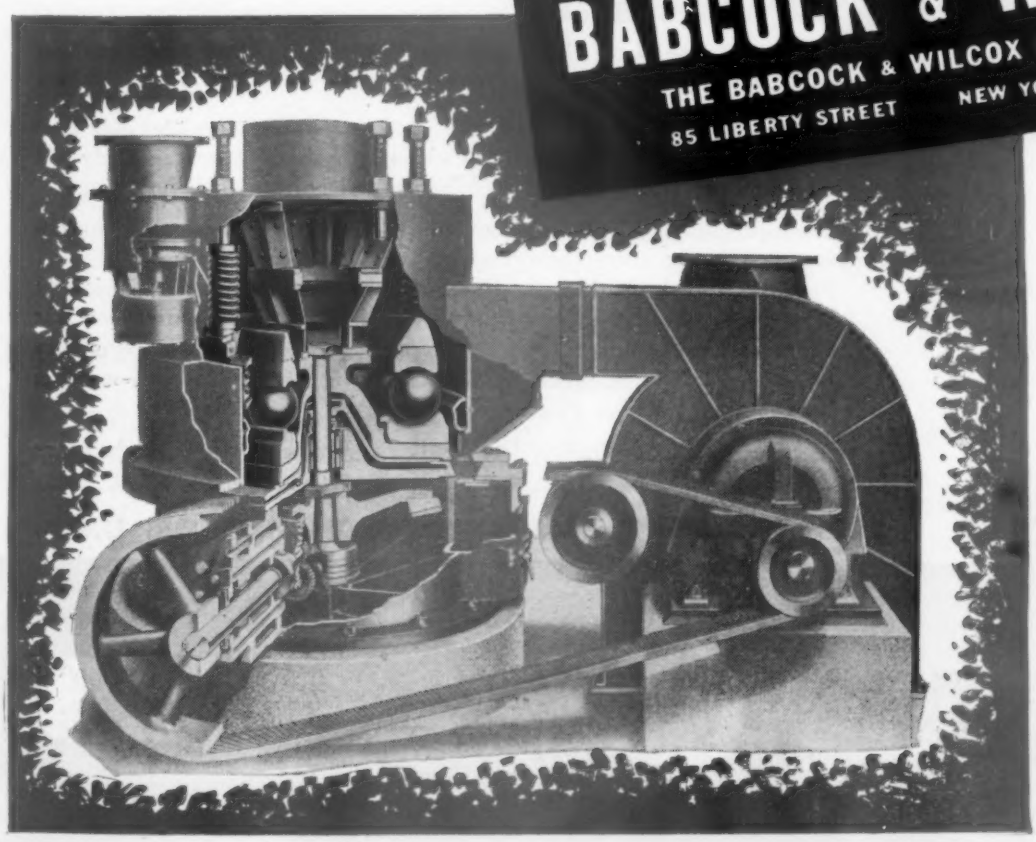
B&W Type E Pulverizers are known for their:

- Consistently high fineness.
- Ability to handle high-moisture coals.
- Reliable operation and low maintenance.
- Uniform delivery of coal.

B&W's well-rounded experience in design, manufacture and installation of direct-firing pulverizers is at the service of cement plant owners and operators.

**BABCOCK & WILCOX**

THE BABCOCK & WILCOX COMPANY
85 LIBERTY STREET NEW YORK 6, N. Y.

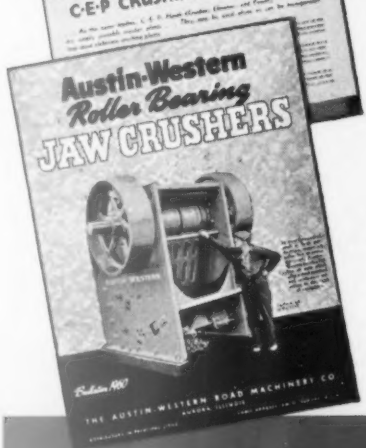


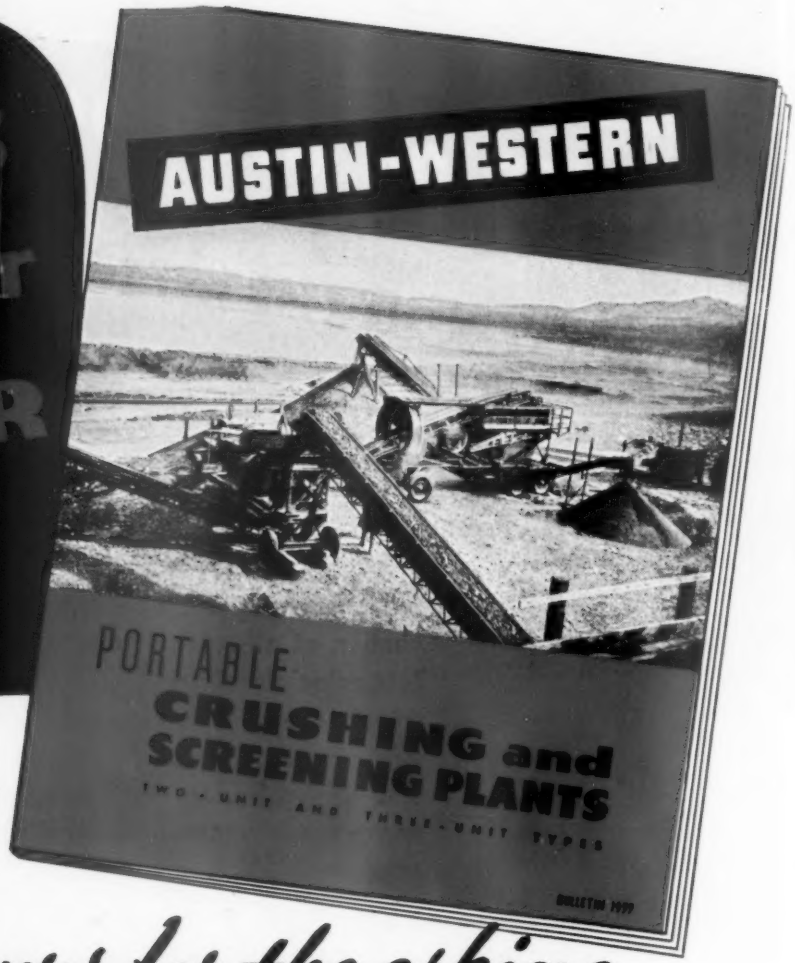
Cut-away view of the B&W Type E Pulverizer

C-59

7011

# Guides to Greater POSTWAR Profits




## *Yours for the asking.*

**Copies of any or all of these interesting and informative bulletins. Ask for each by its number.**

**1999 Two-Unit and Three-Unit Crushing Plants . . . . . 1960 Jaw Crushers**
**1991 C. E. P (Crusher, Elevator, Power) Plants . . . . . 1993 Roll Crushers**

• The Post-War demand for crushed aggregate for highway and all other forms of construction will be tremendous. Austin-Western is ready for present and Post-War demands with job-tested equipment, including:

Jaw Crushers and Roll Crushers in a wide range of sizes; plus matching screens, elevators, conveyors and bins.

Portable Crushing Plants, from the smallest to the magnificent Two-Unit and Three-Unit Plants which combine maximum output and variety of specification on the one hand, and maximum economy of operation on the other; giving the owner flexibility of operation that spells maximum profits.

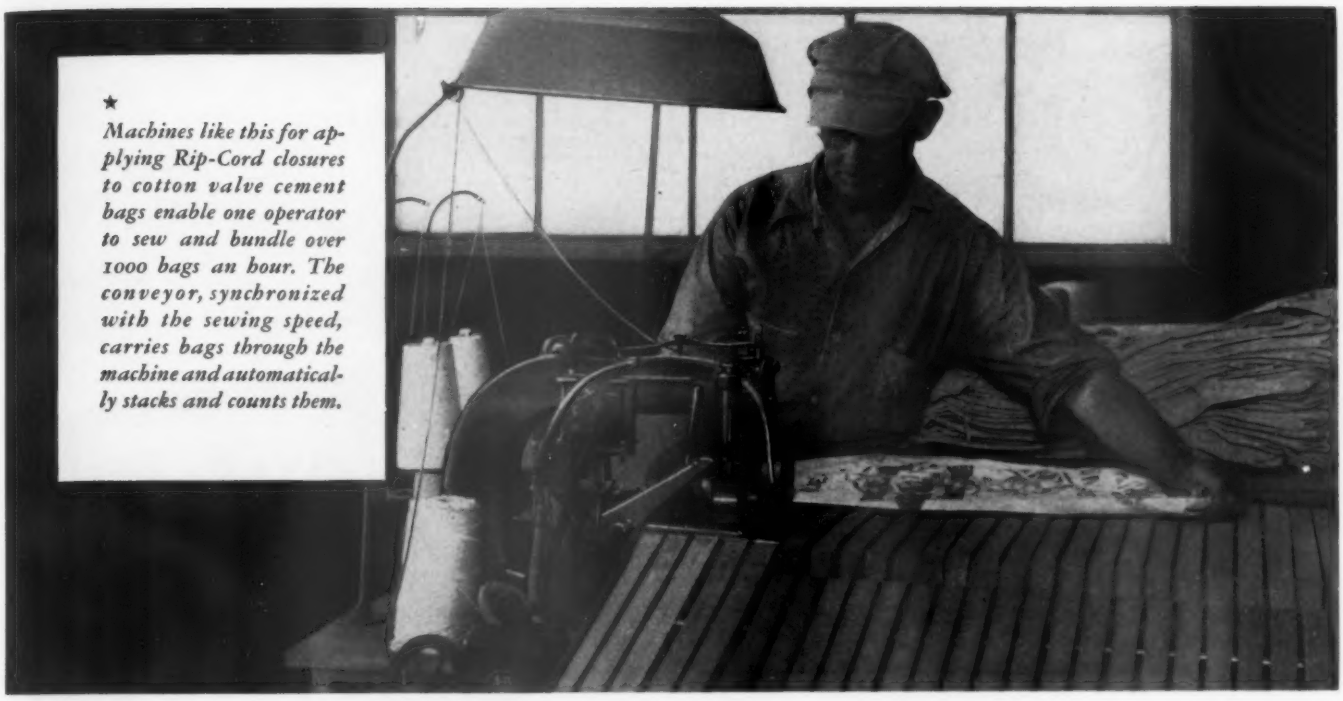
Your nearby Austin-Western dealer will be glad to recommend the plant best suited to your needs.

**AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.**

ARMY E NAVY

BUILDERS OF ROAD MACHINERY
Austin-Western
SINCE 1859

BUY MORE WAR BONDS



★
*Machines like this for applying Rip-Cord closures to cotton valve cement bags enable one operator to sew and bundle over 1000 bags an hour. The conveyor, synchronized with the sewing speed, carries bags through the machine and automatically stacks and counts them.*

# Bemis Rip-Cord Closure makes cotton cement bags go further

EXPERIENCE of cement manufacturers shows they get greater mileage from cotton bags after adopting the Bemis Rip-Cord Closure. In many cases the number of trips per bag has been increased from 8 to 12... an increase of 50% in the life of the bag.

Rip-Cord-closed bags deliver this extra service to cement manufacturers because neither closing nor opening damages the fabric.

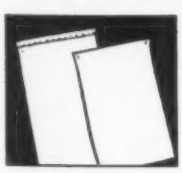
More trips per bag is only one of the economies of using the Rip-Cord Closure. The original cost of bags is less than when made for wire tie closing because bags can be made smaller and without hems. Efficiency in filling is stepped up. There are added savings in handling... in storage and shipping space. Mail the coupon today for complete details on the efficient, economical Bemis Rip-Cord Closure.

**BEMIS BAGS**

**BEMIS BRO. BAG CO.**

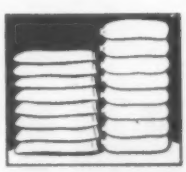
OFFICES: Baltimore • Boston • Brooklyn • Buffalo • Charlotte Chicago • Denver • Detroit • East Pepperell • Houston • Indianapolis Kansas City • Los Angeles • Louisville • Memphis • Minneapolis Mobile • New Orleans • New York City • Norfolk • Oklahoma City Omaha • Peoria • St. Helens, Ore. • St. Louis • Salina • Salt Lake City San Francisco • Seattle • Wichita • Wilmington, Calif.

BETTER BAGS FOR 85 YEARS

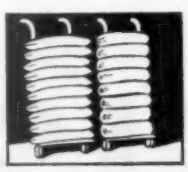


***Saves Money!*** With Rip-Cord Closure bags can be made smaller and without hems and their life is increased, thus reducing costs.

***Saves Bags!*** The Rip-Cord Closure is so easy to open—no tools are required and workmen never need damage bags to remove contents.



***Saves Space!*** Bags closed with Rip-Cord are uniform in size and shape, saving shipping and storage space. Both stacks contain same amount.



***Saves Time!*** More Rip-Cord closed bags can be put on a truck. This means fewer trips for workmen when loading, unloading, storing.

***Free Sample***
**AND LITERATURE**

Investigate the economy, added efficiency and sales advantages of the Bemis Rip-Cord Closure. A sample of the Rip-Cord Closure and descriptive folder will be sent promptly upon request.

**MAIL THIS COUPON!**

BEMIS BRO. BAG CO.
408-P Pine St., St. Louis 2, Mo.

Please send literature describing the Bemis Rip-Cord Closure and a sample.

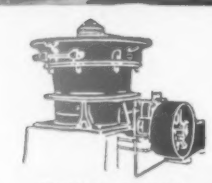
*Name*_____

*Company*_____

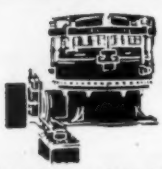
*Street*_____

*City*_____ *State*_____

# Where will YOUR plant fit in the postwar picture?



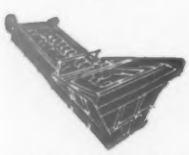
PRIMARY BREAKERS



GYRASPHERE SECONDARY CRUSHERS

BELT AND BUCKET ELEVATORS

JAW CRUSHERS



SAND CLASSIFIERS

PULSATOR VIBRATING SCREENS

HEAVY DUTY FEEDERS

As an aggregate producer, you are facing the postwar prospect of rigid specifications, finer sizing requirements and far keener competition than ever before.

Is your plant and its equipment adequate to serve postwar construction market demands—at a profit?

Start your modernization plans now. Get ready for quick reconversion. Build in new plant efficiency with Telsmith Equipment.

By replacing worn out, obsolete or inadequate units with the right Telsmith machinery you can eliminate roundabout methods of handling and bottle-necks in the flow of materials. Telsmith's greater flexibility insures wider product diversification. Telsmith's speedier, smoother, trouble-free operation and greater capacity will step up your production. And Telsmith's lower power and up-keep requirements will cut down your costs.

Telsmith expert engineering help is at your disposal, whether you plan to expand, modernize or build a complete new sand and gravel or rock crushing plant. Consultation involves no obligation. Get Bulletin E-15.

**TELSMITH Equipment**

**FOR SAND, GRAVEL, ROCK CRUSHING PLANTS**

E-7

**SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN**

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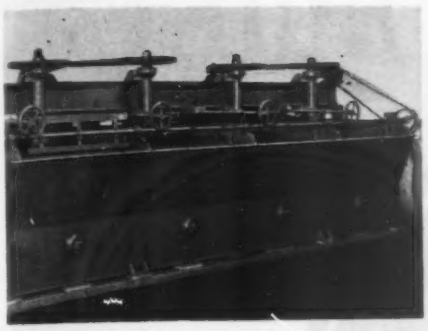
Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14
Brandeis M. & S. Co. Louisville 8, Ky.
Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.
Rish Equipment Co. Roanoke 7, & Richmond 10, Va.
North Carolina Eqpt. Co. Raleigh and Charlotte 1, N.C.
Wilson-Weesner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.

# Denver Equipment in the *Fluorspar* Field

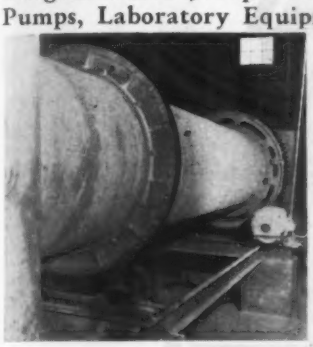


***Mahoning Mining Co.***

A 4-cell No. 30 Denver "Sub-A" similar to one used by Mahoning Mining Company, which has 76 Denver "Sub-A" Cells in its lead-zinc-fluorspar mill. Other Denver machines purchased by this company include 6 Conditioners, 4 Thickeners, 10 Diaphragm Pumps, Reagent Feeders, Duplex Rake Classifier, 3 S.R.L. Sand Pumps, Laboratory Equipment.

***Zuni Milling Company***

Photo shows the 6′x4′ Denver Ball Mill installation at Zuni Milling Company, which uses many Deco machines including 28 Denver "Sub-A" Cells, 2 Ore Feeders, Vibrating Screen, Hydroclassifier, 2 Diaphragm Pumps, Rotary Drum Filter, Rotary Dryer, Conditioner, Thickener, Vertical Sand Pump, 3 S.R.L. Sand Pumps, Reagent Feeders, Tanks, and Laboratory Equipment.

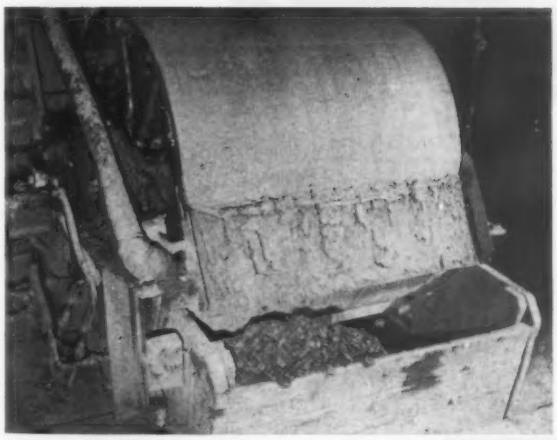


***Kramer Mines, Inc.***

The Kramer flowsheet was developed by Deco Test Lab.; mill layout was made by Deco Engineers; and Deco furnished all equipment including these Denver products: the 36″x21′ Rotary Dryer shown here, Hydroclassifier, 2 Diaphragm Pumps, Ore Feeder, Ball Mill, 3 Vertical Sand Pumps, Conditioner, 18 Denver "Sub-A" Cells, Thickener, Fluorspar Filter and Reagent Feeders.

***Hillside Fluorspar Co.***

This 5′x5′ Denver Conditioner installation is in the Hillside Fluorspar Company Mill where the following Deco products are also used: Ore Feeder, Ball Mill, 18 Denver "Sub-A" Cells, Thickener, Diaphragm Pump, 4 Vertical Sand Pumps, 3 S.R.L. Sand Pumps, Reagent Feeders and Laboratory Equipment.

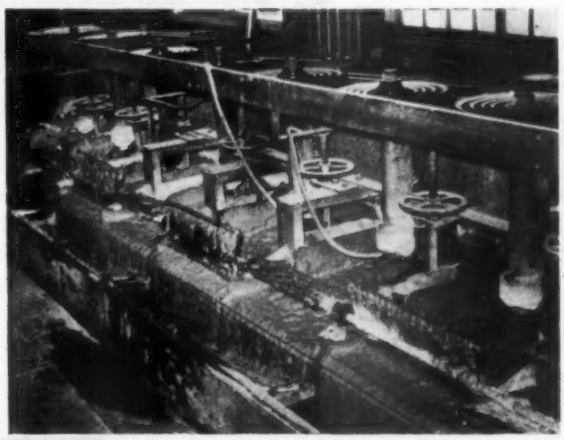


***Fluorspar Processing Company***

A 4′x4′ Denver Rotary Drum Filter at Fluorspar Processing Company which also has a Denver Thickener and Diaphragm Pump and 10 Denver "Sub-A" Cells. Denver Fluorspar Filter features eliminate blinding of filter media caused by fluorspar slimes and soap reagents.

***If you are planning a mill...***

. . . you, too can profit from Deco's complete engineering and equipment service:
ore testing . . . equipment from "Feeder to Dryer" . . . field engineering service . . . mill layouts helpful engineering publications.



***Rosiclare Lead and Fluorspar Co.***

Part of the 14 Denver "Sub-A" Cells in operation at Rosiclare Lead and Fluorspar Mining Co. Other Denver machines in this mill include a Ball Mill, Conditioner, Thickener, 2 Diaphragm Pumps, Vertical Sand Pump, Mineral Jig, and 2 S.R.L. Sand Pumps.

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

NEW YORK CITY 1, N.Y.: 4114 Empire State Bldg.
CHICAGO 1: 1123 Bell Bldg., 307 N. Michigan
MEXICO, D.F.: Edificio Pedro de Gante, Gante 7
MIDDLESEX, ENG.: 493A, Northolt Rd. S. Harrow
RICHMOND, AUSTRALIA: 530 Victoria Street
JOHANNESBURG, S. AFRICA: 8 Village Road
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STANDARD RELIABLE 24 HOUR SERVICE EFFICIENT

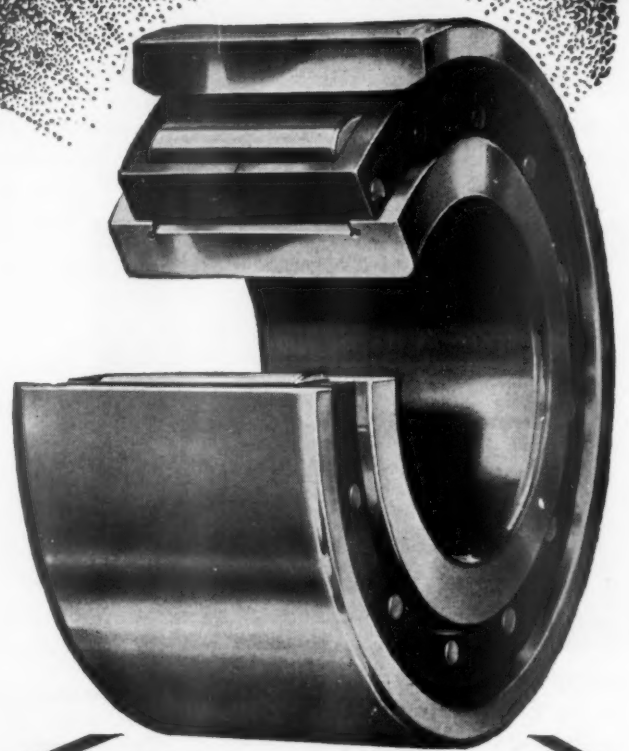
**DENVER EQUIPMENT COMPANY, 1400 17th St., Denver 17, Colorado**

# RIGHT-ANGLE LOADING REDUCES BEARING WEAR

Rollway Right-Angle Roller Bearings will make your machines *last longer . . .* with *lower power costs . . . lower maintenance costs . . .* and *lower replacement costs.* That's because Rollway's *right-angle loading* splits all compound loads into the two simple components of *pure radial* and *pure thrust . . .* and carries each of these components on a separate bearing assembly *at right angles to the roller axis.*

This load simplification reduces the unit loading on rollers and bearings. It insures lower starting and running torque. It holds radius-rub and roller-end wear-back to a minimum. And it eliminates all resultants from oblique loads, and all piling up of load magnitudes. Thus you get *a longer period of precision operation.* And you suffer *fewer shut-downs for bearing adjustment or replacement.*

Don't wait until reconversion problems overwhelm you. Take this important first-step toward postwar preventive maintenance today: Send drawings or detailed description of your postwar applications for free bearing analyses and recommendations by our engineering specialists. No charge. No obligation. S.A.E. and American Standard metric dimensions and tolerances are available for most applications, assuring quick supply and replacement at low cost.



**Type MCS double-width Radial —carries all radial loads at right angles to the roller axis. Thrust loads are carried on a separate assembly.**

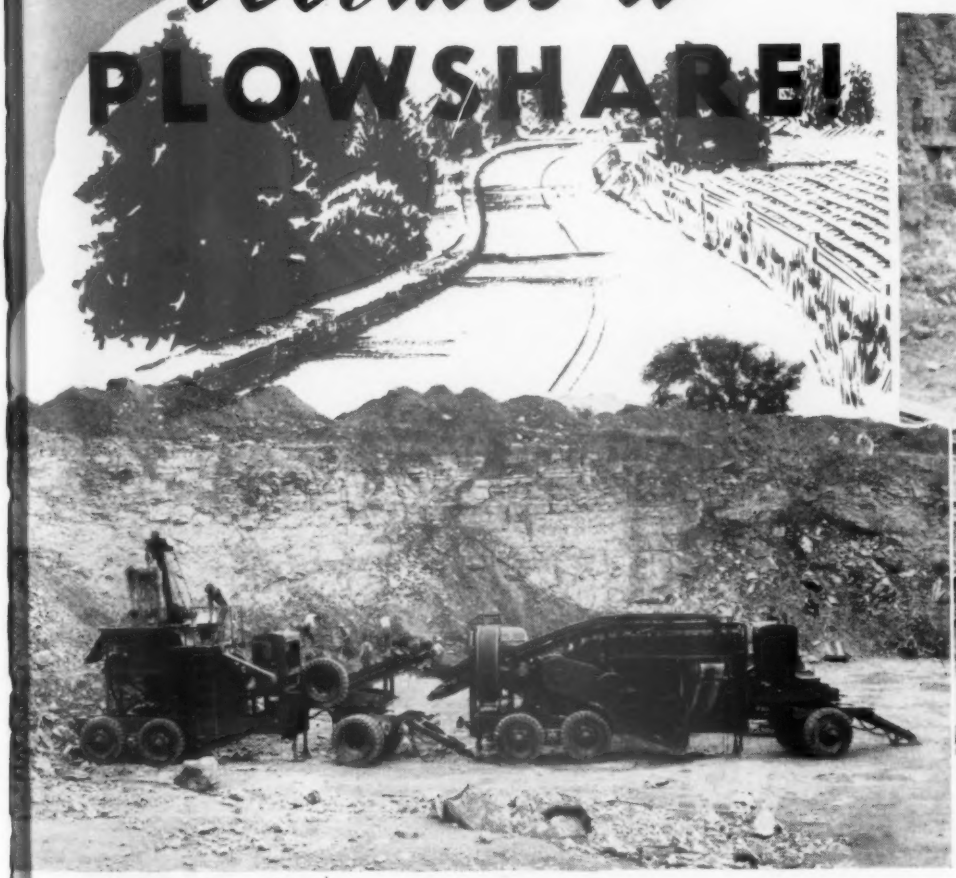
**ROLLWAY BEARING COMPANY, INC.**
**Syracuse 2, N. Y.**
*since 1908, makers of*

**ROLLWAY** *Right-Angle Loaded* **ROLLER BEARINGS**

**SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles**

AMERICA IS *Built with Aggregate!*

# *Another* SWORD *becomes a* PLOWSHARE!



*This Cedarapids mobile plant was on duty in a French quarry five days after D-day.* Signal Corps Photo

*Designed for military service, this type of Cedarapids crushing and screening plant will easily handle your toughest aggregate producing problems.*

Cedarapids
Built by IOWA

## THE IOWA LINE

*of Material Handling Equipment Includes*

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS — TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

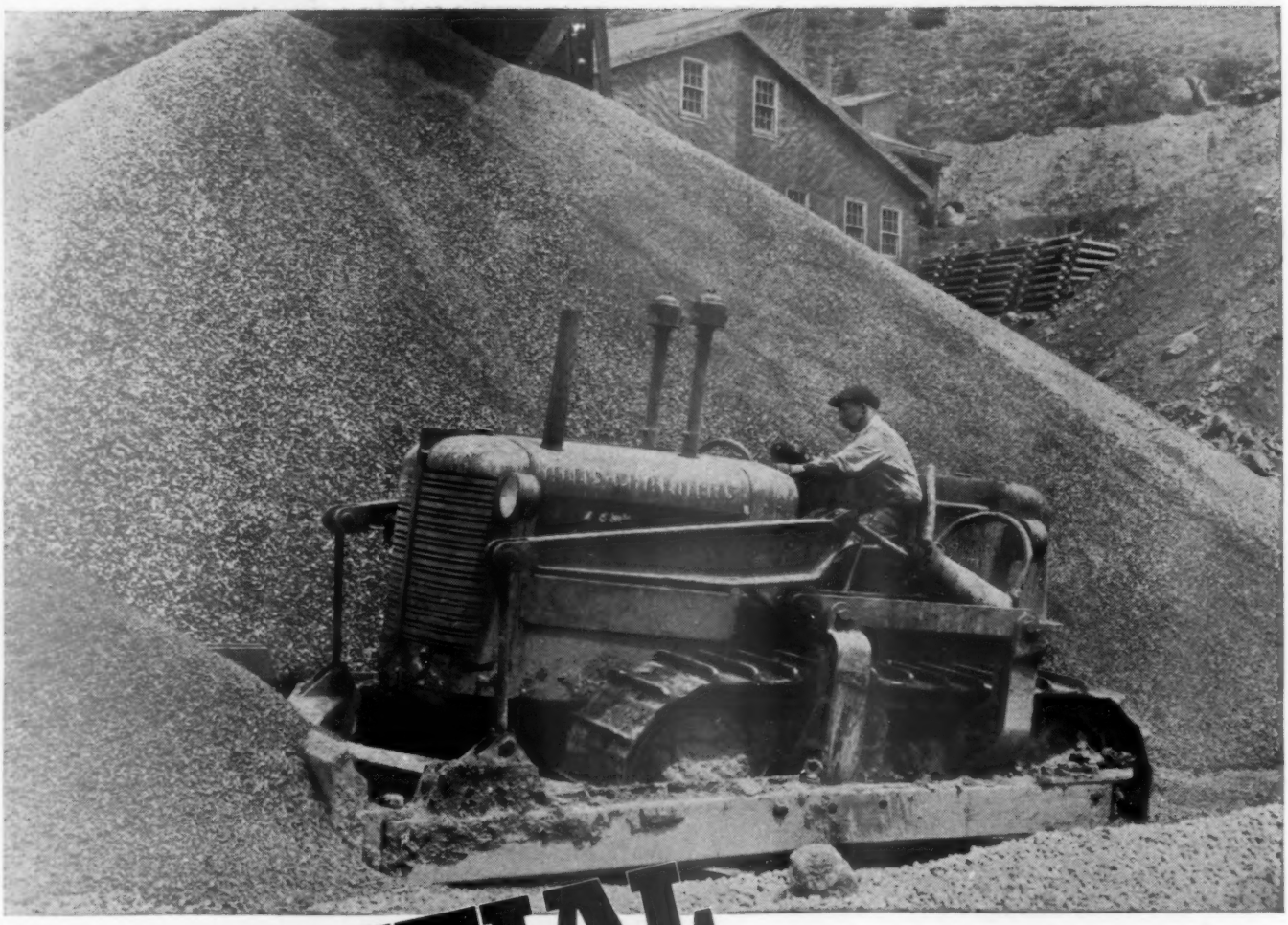
From building military airports and highways that are vital to victory to producing aggregates for peacetime airports, highways, dams, and other construction projects, is the next step for these Cedarapids portable crushing plants.

We're still building them for the Army and Navy but soon all the experience and facilities which produced these plants on schedule can be turned almost entirely to building them for you. They will turn out better products for less money, keeping you in that wonderful competitive position that you have always had with Cedarapids equipment.

Whether you are figuring on a single unit or a complete plant, you'll be way ahead if you get it from Iowa, headquarters for aggregate producing and crushing equipment, and asphalt plants. See your local Iowa dealer today.

**IOWA MANUFACTURING COMPANY**
**CEDAR RAPIDS, IOWA**

ARMY E NAVY
CEDAR RAPIDS



# ESSENTIAL TO PROFITABLE OPERATION

Western Fluorspar Corp., Cowdrey, Colorado, has modernized its operation with the Model HD-10, 2-cycle Diesel tractor. Equipped with a Gar Wood 'dozer, it quickly handles stockpiling, road-building, moving of heavy equipment and material.

To meet postwar competition it will be necessary to change to new, short-cut methods of handling material. There's no returning to normal as we once knew it . . . we are headed toward a *new normal* . . . a *new* world.

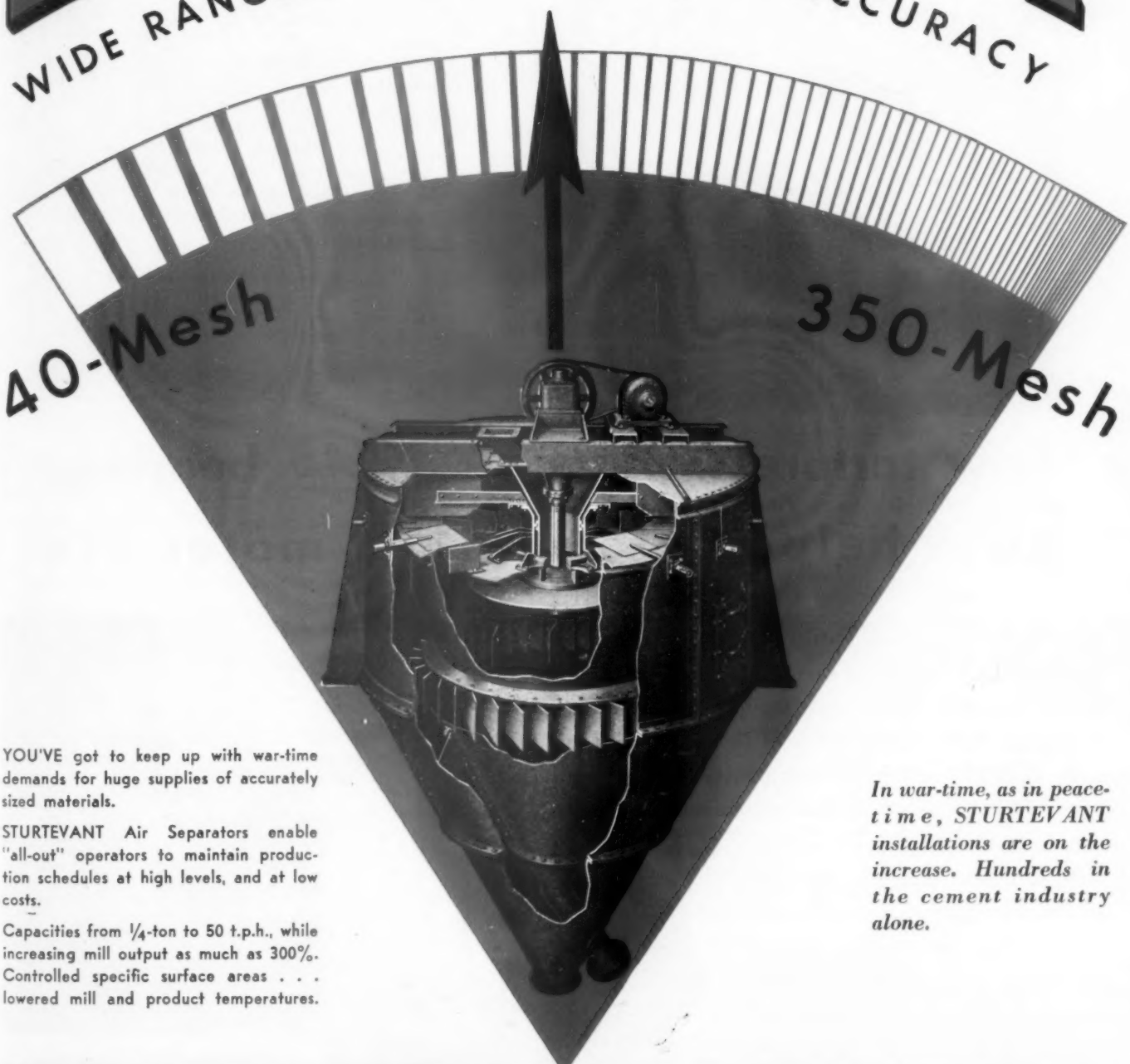
Be ready! In many ways modern, 2-cycle Diesel tractors can help you cut cost, increase production. For here is NEW POWER . . . fast-moving, economical, smooth-operating! These units will enable you to step up your stripping, road-building, cleaning-up . . . help you move materials and heavy equipment more quickly. They fit right in with the new tempo . . . the new tools . . . the new ways of getting things done. It is 2-CYCLE . . . the modern Diesel for modern operations! Get all the facts. See your Allis-Chalmers dealer.

**ALLIS-CHALMERS**

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

# STURTEVANT

WIDE RANGE • *Fine Sizing* • ACCURACY




YOU'VE got to keep up with war-time demands for huge supplies of accurately sized materials.

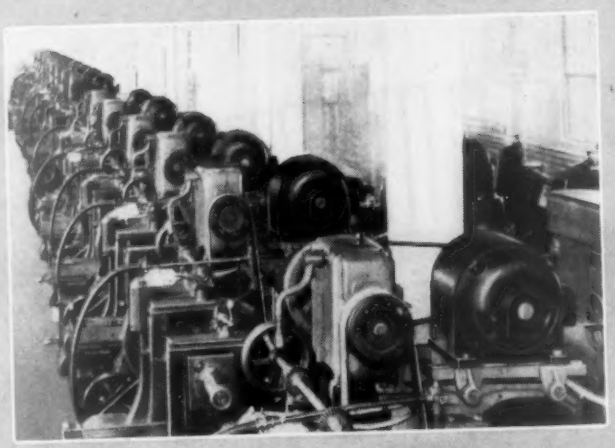
STURTEVANT Air Separators enable "all-out" operators to maintain production schedules at high levels, and at low costs.

Capacities from 1/4-ton to 50 t.p.h., while increasing mill output as much as 300%. Controlled specific surface areas . . . lowered mill and product temperatures.

*In war-time, as in peace-time, STURTEVANT installations are on the increase. Hundreds in the cement industry alone.*

**STURTEVANT MILL CO.** HARRISON SQUARE **BOSTON 22, MASS.**

# BEARINGS BEAR UP

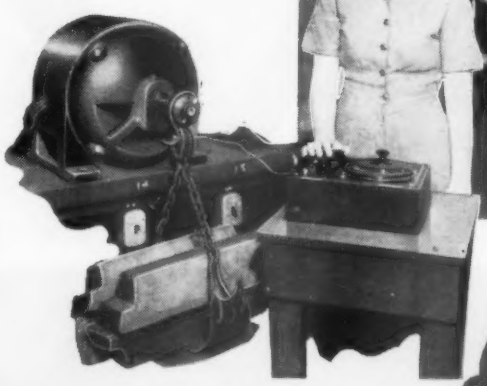


**Powered by Tri-Clad sleeve-bearing motors, this battery of milling machines has been in round-the-clock operation on war work since before Pearl Harbor. The short-center, hinge-base drives put a hard, steady pull on the motor bearings. In addition, the machines are in the hands of several different operators each day, many newly trained. Despite the severe service, motor-bearing performance has been above prewar levels. Maintenance manpower has been conserved, and production held on schedule.**

Tri-Clad motors driving milling machines in the River Plant Division of the Savage Arms Corp., Chicopee Falls, Massachusetts.

## How torture tests on TRI/CLAD bearings have helped us lengthen motor life

Before the Tri-Clad motor-bearing designs were adopted, many models of this new motor were tested to destruction under heavy shaft loadings applied from all directions, with various kinds of lubricants, and under many different speed and temperature conditions. As new Tri-Clad types are introduced, these tests continue—some for years—in "torture" areas such as shown at right. Each test broadens our knowledge, offers new clues to longer motor life. Throughout industry, results have substantiated the improved bearing performance forecast by these tests. *General Electric Company, Schenectady 5, New York.*



GENERAL ELECTRIC

TRI/CLAD MOTORS

Buy all the BONDS you can — AND KEEP ALL YOU BUY

# The Robins 3-P Plan
## enables you to
# GET READY FOR TOMORROW—TODAY!

UNDER the restrictions of war-time priorities, many plants have been forced to "get by" with over-worked, over-aged equipment. When these restrictions are removed, after Victory, there will be a wild scramble for new equipment—with inevitable delivery delays. Such delays may seriously affect operations at a time when competitive conditions will demand the fullest measure of efficiency.

To escape this scramble, to avoid this delay, Robins has set up the "3-P Plan" which enables far-sighted plant owners to obtain priority standings today—to assure deliveries at the earliest possible dates after restrictions are lifted.

The 3-P Plan is simple in operation. It assures Prior Preference Protection for any Robins products ordered now for delivery then. Your order will be entered in our books as a "tentative order only." But it effectively reserves a specific place for you in the Robins post-war production schedule.

When unrestricted deliveries are again permitted, you will be reminded of the order and the number of your position on the Robins 3-P list. Meanwhile, this Plan has protected your delivery date and you will have a time-saving priority over the flood of replacement demands that will undoubtedly arise.

We urge you to check your present plant equipment . . . considering it from the aspects of condition, efficiency and future economy of operation. Then place your 3-P order with Robins immediately, to insure earliest possible delivery after Victory. For quickest attention, please address Dept. PQ-12.

### WHAT YOU CAN BUY UNDER THE ROBINS 3-P PLAN

**Conveyor Idlers**—in both troughing and return types, for belt widths from 14" to 60": Roller Bearing for heavy duty; Ball Bearing for maximum service at moderate cost; Plain Bearing at low cost. Also Trainers and Rubberdisc.

**Vibrating Screens:** GYREX for heavy duty sizing and scalping; VIBREX for fine sizing; ELIPTEX for extreme accuracy at high speed—also for dewatering; CONTRACTORS' semi-portable, low cost, light weight.

**Conveyor Systems:** The first Belt Conveyor to handle sand and gravel was made by Robins. This fact—plus Robins long interim experience—is your assurance Robins can design the Conveyor system best suited to your specific needs.

**Complete Plants:** Many of the most modern aggregate plants are Robins designed, built and equipped. Re-designing old plants is another Robins specialty.

*—and anything else that Robins makes*

ENGINEERS • MANUFACTURERS • ERECTORS

**ROBINS** *makes:* BELT CONVEYORS • COAL AND ORE BRIDGES • BUCKET ELEVATORS • CAR AND BARGE HAULS • CAR DUMPERS • CAR RETARDERS • CASTINGS • CHUTES • CONVEYOR IDLERS AND PULLEYS • CRUSHERS • FEEDERS • FOUNDRY SHAKEOUTS • GATES • GEARS • GRAB BUCKETS • PIVOTED BUCKET CONVEYORS • VIBRATING SCREENS • SCREEN CLOTH • SELF-UNLOADING BOAT MECHANISMS • SKIP HOISTS • STORAGE AND RECLAIMING MACHINES AND SYSTEMS • TAKEUPS • LOADING AND UNLOADING TOWERS • TRIPPERS • WEIGH LARRIES • WINCHES • WINDLASSES

**ROBINS**
**CONVEYORS**
INCORPORATED
Founded in 1896 as Robins Conveying Belt Co.
**PASSAIC • NEW JERSEY**

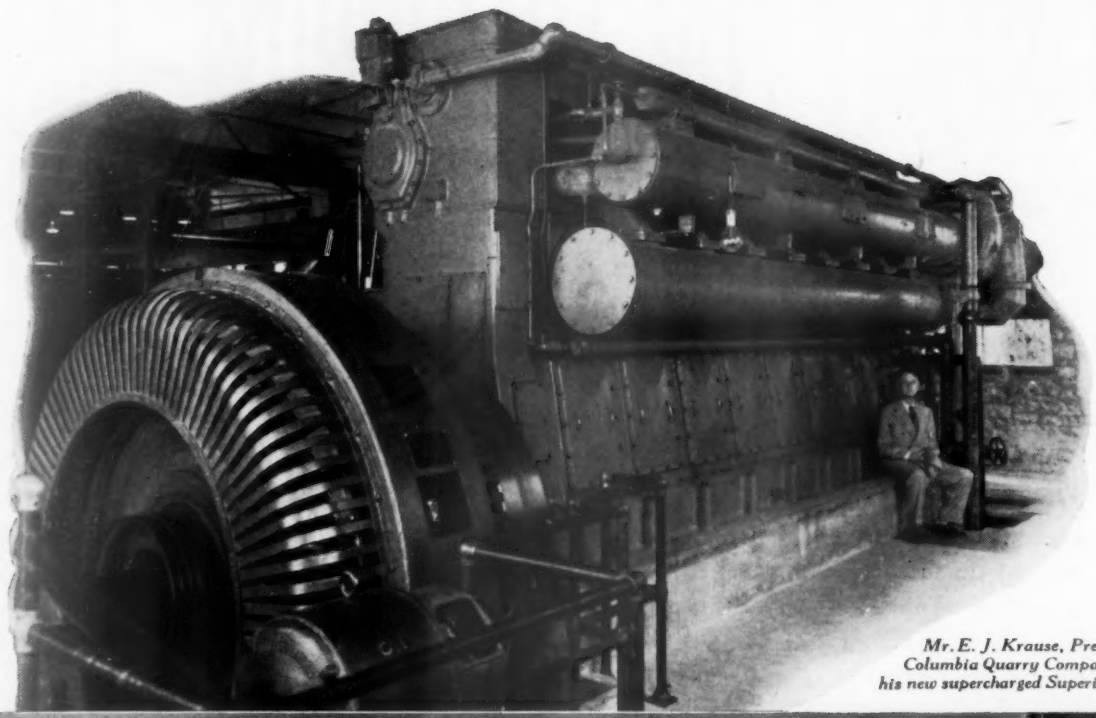
*FOR MATERIAL AID IN MATERIALS HANDLING . . . . . It's* **ROBINS**

**MATERIALS HANDLING MACHINERY**

## Columbia Quarry Co. Installs

# NEW SUPERCHARGED SUPERIOR DIESEL

## to increase nation's output of agricultural limestone



*Mr. E. J. Krause, President of Columbia Quarry Company, with his new supercharged Superior Diesel*

IN response to the War Food Administration's plea for additional tonnage of agricultural limestone, Columbia Quarry Company of St. Louis have added another Superior Diesel to their six Superiors already in service. This new supercharged 14½ x 20 Superior is rated at 1000 HP at 300 RPM.

Columbia Quarry's all-Diesel power plant now totals over 4000 HP—the largest installed Diesel horsepower in the rock crushing industry in America, and its production of 4000 tons of agricultural limestone every 24 hours means bigger crops and more food for wartime needs.

**SUPERIOR ENGINES**

**Division of The National Supply Co.**

**Executive Offices: Pittsburgh, Pa.**

*General Sales Office:* Springfield, Ohio

*Sales Offices:* Ames, Iowa; Boston, Mass.; Chicago, Ill.; Detroit, Mich.; Fort Worth, Texas; Houston, Texas; Huntington, W. Va.; Jacksonville, Fla.; Los Angeles, Calif.; Philadelphia, Pa.; New York, N. Y.; St. Louis, Mo.; Seattle, Wash.; Tulsa, Okla.; Washington, D. C.

*Canadian Distributors:* The General Supply Co., Ltd., Ottawa, Montreal, Toronto

*Superior* DIESELS • STATIONARY, 28 to 1325 H. P.
MARINE, 28 to 1325 H. P. • GENERATOR SETS, 20 to 928 kw.

# TYPICAL DIESEL LUBRICATION PROBLEMS:

## 5. Liner Wear

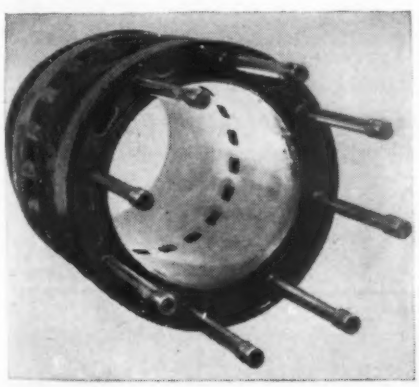
Wear on Diesel liners is commonly concentrated in the high-temperature belt near the combustion chamber. This is largely attributable to the inherent inability of most lubricating oils to "wet" hot metal surfaces.

Unlike spark ignition engines in which a partial vacuum in the combustion space during the intake stroke assists in drawing oil toward the upper compression rings, Diesels operate at or above atmospheric pressure in the combustion space which tends to drive oil away from the rings.

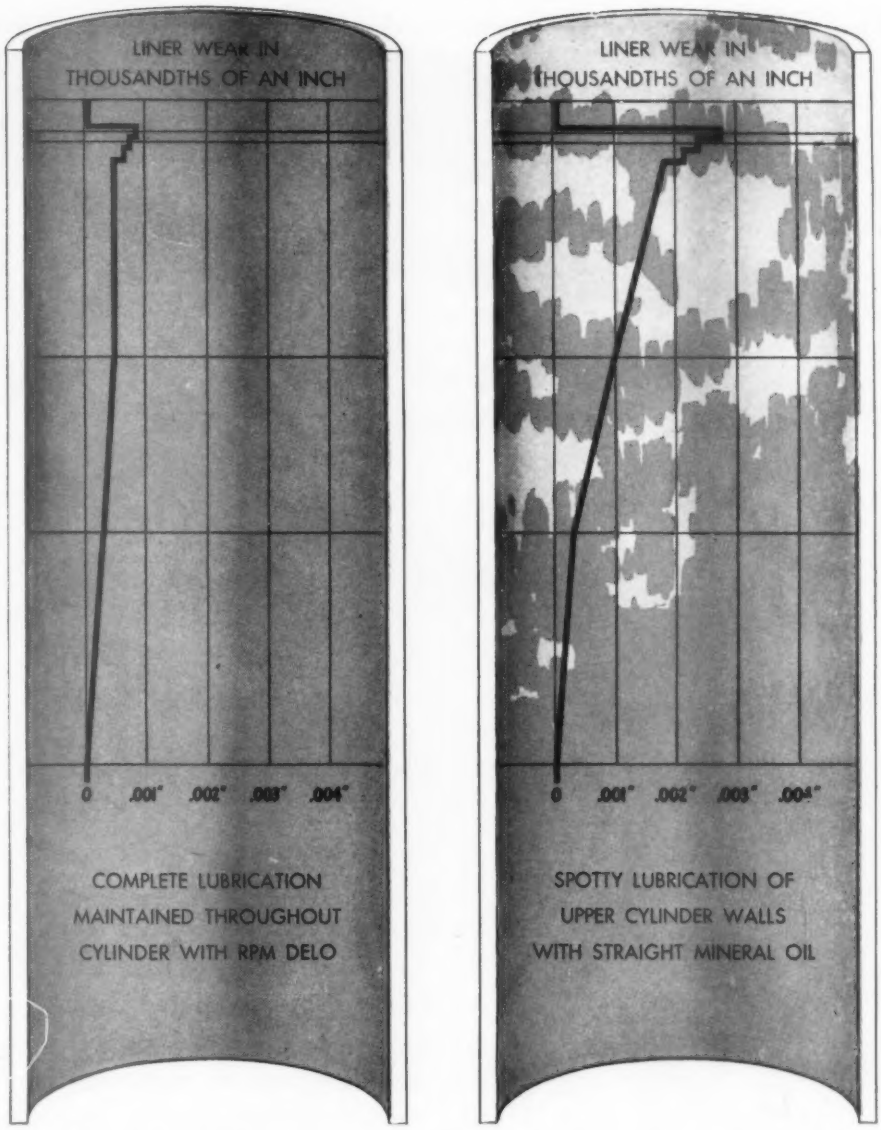
It is imperative then—to prevent relatively dry operation in the top piston ring high-temperature area—for the lubricant to have high-temperature adhesion characteristics.

To achieve this high adhesion factor under all operating conditions in RPM DELO Diesel Engine Lubricating Oil, a special compounding material was added. With this additive, RPM DELO will not run away from hot surfaces, thus preventing metal-to-metal contact on hot-running engine parts.

A typical example of the effectiveness of RPM DELO in preventing liner wear is offered by the Chicago, Rock Island and Pacific Railroad. One of its "Rocket" Diesel powered locomotives ran 157,076 miles on RPM DELO without an oil change, with liner wear of only .001 in.



**Liner from Rock Island "Rocket" engine showing wear of only .001 in. after 157,076 miles on RPM DELO without an oil change.**


LINER WEAR IN THOUSANDTHS OF AN INCH
0 .001" .002" .003" .004"
COMPLETE LUBRICATION MAINTAINED THROUGHOUT CYLINDER WITH RPM DELO
LINER WEAR IN THOUSANDTHS OF AN INCH
0 .001" .002" .003" .004"
SPOTTY LUBRICATION OF UPPER CYLINDER WALLS WITH STRAIGHT MINERAL OIL

**These charts of one of the tests required by the Army in certifying oil for use in combat equipment, graphically illustrate (right) marked increase of liner wear in upper cylinder zone due to inability of straight mineral oil to provide full lubrication of this high-temperature area; and (left) reduction of liner wear by ability of RPM DELO to stick to these hot spots.**

Other causes of liner wear minimized by RPM DELO include:

1. Corrosion caused by carbonic and other acids at low temperatures.
2. Scuffing of liners from rocking of piston rings in worn grooves.
3. Scoring and scratching of liners due to stuck piston rings.

Reducing liner wear to a remarkable degree is but one of RPM DELO's advantages in solving Diesel engine maintenance problems. Its other properties include: The ability of RPM DELO to eliminate ring sticking, to stop excessive deposits on rings and ports, and to prevent bearing corrosion.

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial RPM DELO (concentrate). Ask your Diesel engine manufacturer or distributor for the RPM DELO supplier in your vicinity.

RPM DELO

*Write on your letterhead for free booklet on* RPM DELO, *Standard of California, Dept. T-12, San Francisco, California*

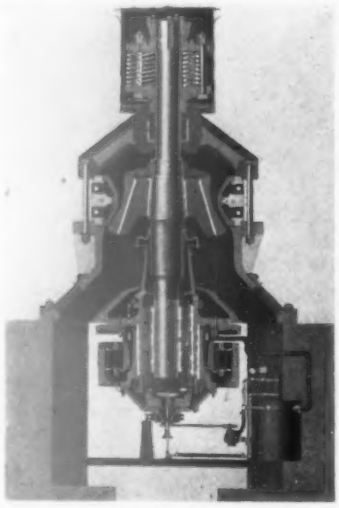
**STANDARD OF CALIFORNIA**

# Why operators buy "KVS" CRUSHERS

**"BECAUSE IN ADDITION TO THEIR GREAT CRUSHING ABILITY —**

# We Save Power!"

Ball Bearing Gearless Short Shaft Standard Crusher with synchronous motor built-in pulley.



Ball Bearing Gearless Type Low-Head Crusher for fine crushing.

● *We have a very large line of mining, crushing, cement, lime burning, and pulverized coal equipment. If interested write for special bulletin.*

• Kennedy Ball Bearing Gearless Gyratory Crushers save power because the power is applied direct to the crushing point. A large pulley running on ball bearings acts like a flywheel. There's no power wasted —and that's just one reason why, size for size, "KVS" Crushers will crush more than any geared crusher made—and do it for less operating cost and less cost of maintenance and repairs. Built in a wide range of sizes and capacities for both primary and secondary crushing. Look over the entire five "KVS" reasons given here—then write for Catalog —always remembering

**• YOU GET BETTER, LOWER-COST CRUSHING WITH**

**HERE ARE THE FIVE "KVS" REASONS**

**POWER SAVING** No power wasted. All power applied directly to crushing.

**CAPACITY** Size for size, will crush more than any geared crusher now made.

**EASY MAINTENANCE** Entire crusher interior easily accessible.

**LOW REPAIR COST** Reversible concaves prolong life of this vital wearing part.

Forced feed lubrication makes for low cost operation.

**EFFICIENCY**

Quick, simple adjustment of crusher opening. Suspension of shaft on spring release head protects against tramp iron. Only crusher built with spring release that enables crushing on solid anvil—concave.

# KENNEDY-VAN SAUN - BALL-BEARING GEARLESS GYRATORY CRUSHERS

**KENNEDY-VAN SAUN MFG. & ENG. CORPORATION**

*Representatives in All Principal Cities of the United States*

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NEW YORK, N.Y.

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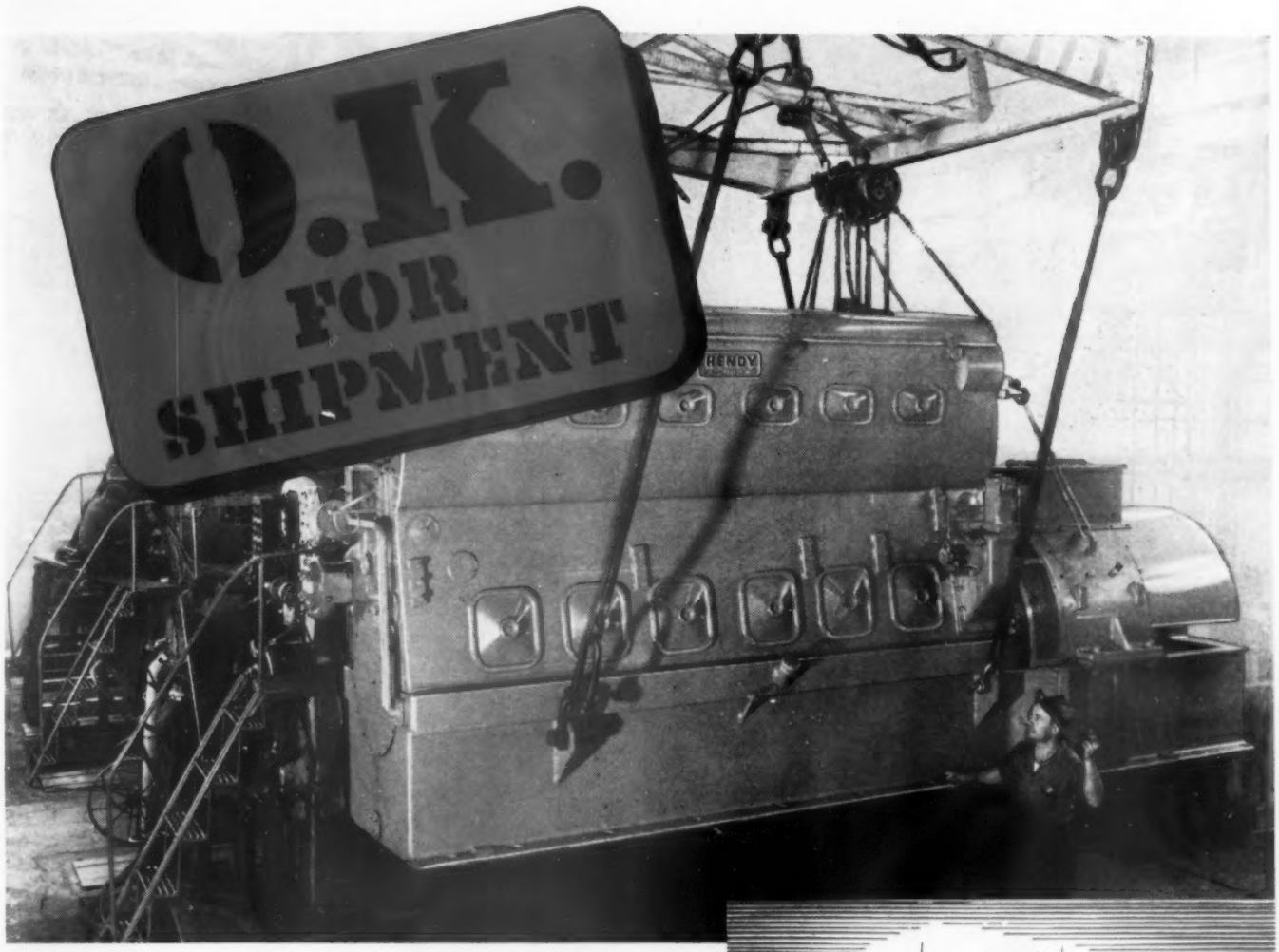
DANVILLE, PA.




# Now "DIESELS by HENDY" for the Maritime Commission

AV1 Cargo Ship

To the long list of Hendy products built for the Maritime Commission in the past few years is now added *Diesel generating sets*... of a *new* and *advanced* type. Coming off the production line in a steady stream, these 250-kw plants for the AV1 Cargo Ships are another example of Hendy's ability to design, produce and deliver—to combine precision workmanship with mass production.

The experience gained in building the engines for over one-third the entire Liberty Ship Fleet...the 4000-, 6000- and 8500-hp turbines and reduction gears for cargo and hospital ships... and turbo-generators of many types, made possible the remarkable delivery record of these Hendy Diesel generating plants.

Hendy Series 50 Diesels are available for industrial applications as prime movers, or with Crocker-Wheeler generators as a-c or d-c generating plants up to 450-kw in size. Orders are now being accepted for early deliveries. Write for complete information, stating your power requirements.

## WRITE FOR DATA ON THE HENDY SERIES 50 DIESEL

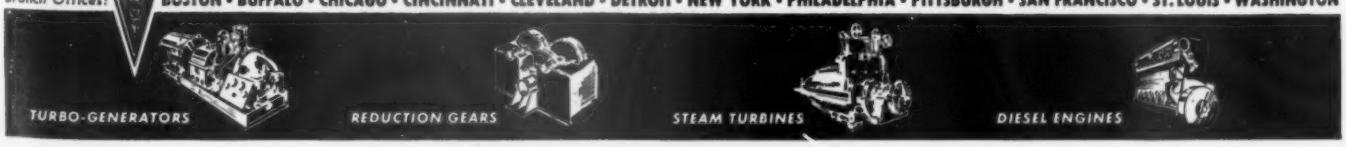
### 375 to 675 hp

This modern Diesel offers 22 proved features in design never before available in a single engine. Direct-actuated dual valves, unit-type fuel injectors, overhead camshaft, hydraulic tappets and oil-cooled pistons are just a few of them. You, as a Diesel operator, will appreciate these and the others—for, combined, they are responsible for the high operating efficiency of Hendy Diesels. Catalog available on request.

**JOSHUA HENDY IRON WORKS**
ESTABLISHED 1856
**SUNNYVALE, CALIFORNIA**

71-D-11

Branch Offices: BOSTON • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • NEW YORK • PHILADELPHIA • PITTSBURGH • SAN FRANCISCO • ST. LOUIS • WASHINGTON



SINCE 1887

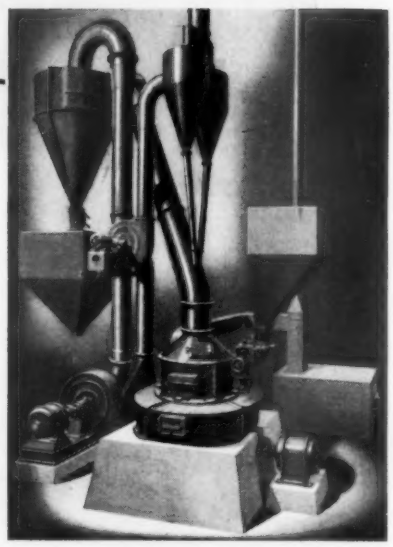
# Complete Line of RAYMOND ROLLER MILLS

SUPER ROLLER MILL

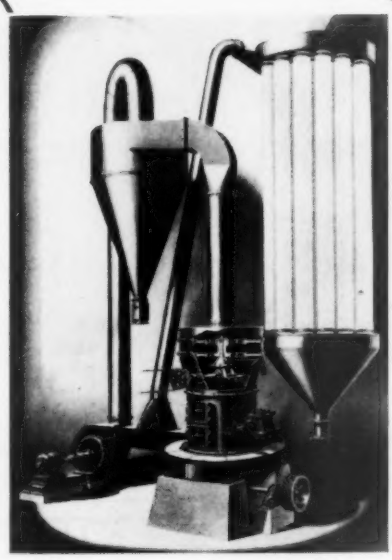
HIGH-SIDE ROLLER MILL

MIDGET ROLLER MILL

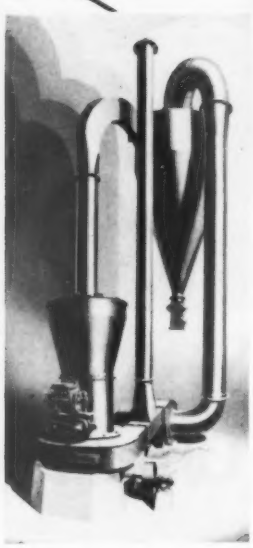
LOW-SIDE ROLLER MILL



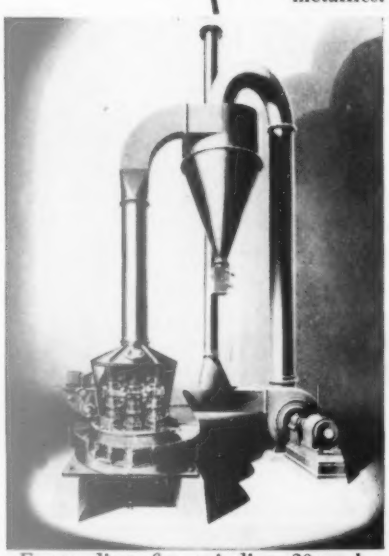
Largest Roller Mill built, "carload per hour" output. Shown here equipped with heater and drying system and air separating equipment.



This whizzer-equipped Roller Mill is for superfine finish-grinding operations, pigments, chemicals, fillers, bauxite and other non-metallics.



For small capacities, this Midget size machine gives typical Roller Mill economy in production.



For medium fine grinding, 20-mesh to 100-mesh materials, such as phosphate rock, agricultural limestone, gypsum and other non-metallic minerals.

The Roller Mill, equipped with air separation, was developed by Raymond a half-century ago. Since that time, constant improvements and advanced designs have produced a ***complete line,*** which meets all industrial requirements.

For small and large capacities, up to forty tons per hour
For medium fine or super-fine grinding to 99.99%-400 mesh
For handling dry materials or moisture-laden materials up 10% or 15% moisture content
With cone type or whizzer type separators according to use

There is a Raymond Roller Mill for every purpose. The rock products industry is "a natural" for Roller Mill economy . . . gypsum, limestone, clays and kaolin, talc and bauxite, pigments and chemicals.

Whatever your problem, Raymond engineers can help you . . . with the proper type of mill, designed for the job. Ask for Raymond Roller Mill catalogs, mentioning your requirements.

**RAYMOND PULVERIZER DIVISION**
**COMBUSTION ENGINEERING COMPANY, INC.**
**1321 North Branch Street, Chicago 22, Illinois**

Canada: Combustion Engineering Corp. Ltd., Montreal

*Bulletins* ON REQUEST

# 3 ENGINEERING TECHNIQUES

## ARE ESSENTIAL

The skills of three separate engineering staffs determine the design of your U. S. Rubber Conveyor Belts.

For every conveyor belt must be individually engineered, if it is to prove satisfactory in all respects. The particular conditions under which it will operate must be known and considered.

The design and construction of a U. S. Rubber Conveyor Belt, therefore, is influenced from the time a mine or quarry is planned.

Long before we produce a belt for you, our engineers have held two vitally necessary consultations: one with your engineers *at the scene of service;* another with the makers of the mechanical conveyor equipment installed.

Only through such coordinated effort can a conveyor belt be properly designed and built. All three groups must make their technical contribution in developing belts that can be relied on for long, economical service.

***SERVING THROUGH SCIENCE WITH*** ***ENGINEERED RUBBER CONVEYOR BELTS***

# UNITED STATES RUBBER COMPANY

**1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20. N. Y. •** ***In Canada:*** **DOMINION RUBBER COMPANY, LTD.**

# How We Harnessed a Magnet to Eliminate Wear

Where there is no mechanical contact between moving parts, no wear can take place. This is the principle which P&H uses to transmit power for hoisting the dipper of the new P&H Electric Shovel. . . . The *Magnetorque Drive* transmits torque by electro-magnetic forces rather than by mechanical contact. Designed specifically for Electric Shovel operation, it eliminates motor commutation problems, sliding gears, mechanical clutches and other complicated mechanisms. Reversing the hoist motor is no longer necessary. Hoisting is completely independent of all other operations.

The *Magnetorque Drive* is typical of the advanced engineering and simplicity embodied in every detail of the new P&H Electric Shovel. Write for full information about the new P&H Electric Shovels.

**P&H** **ELECTRIC SHOVELS**

4451 W. National Ave.
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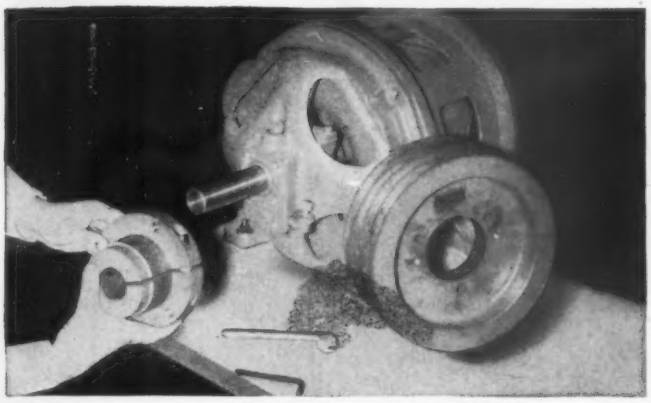
**HARNISCHFEGER CORPORATION**

EXCAVATORS · ELECTRIC CRANES · ARC WELDERS · HOISTS · WELDING ELECTRODES · MOTORS

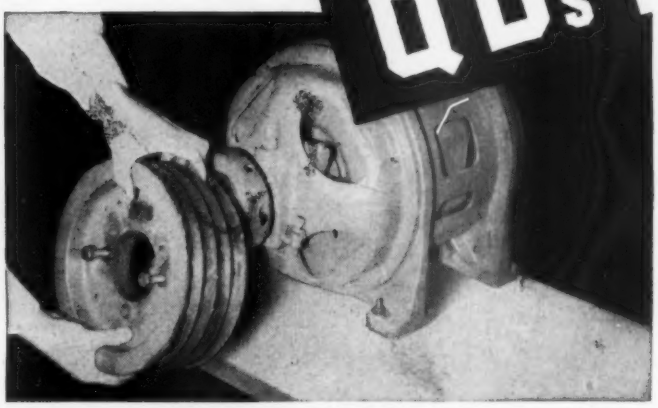
THE GREATEST FORWARD STEP EVER MADE IN ELECTRIC SHOVEL DEVELOPMENT

# DO YOU HAVE THESE 3 FEATURES IN YOUR PRESENT SHEAVES?

*If so, they must be* WORTHINGTON'S **QDs**



**1.** EASY TO GET ON



**2.** EASY TO GET OFF

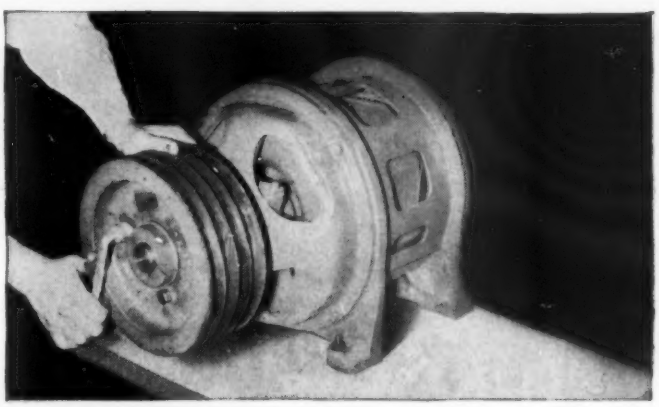
Are you losing time with old-fashioned sheaves? You may be, if you haven't got the QD's time-saving *three* features.

**1.** Split hub — with taper cone surface for mounting taper bored rim — makes *installation easy.*

**2.** Pull-up screws usable as jack bolts break Taper Friction Fit, quickly free shaft for bearing maintenance, speed changes, or *quick removal* and mounting of different diameter rims . . . without disturbing the hub. No alignment problems.

**3.** Bigger pull-up bolts for higher taper cone pressure insure positive clamp grip, keep sheave *always tight on the shaft.*

The sheave with these 3 features, teamed up with Worthington Goodyear Endless Cord V-Belts will give you more for your money. Stock size sheaves and belts at strategic centers from coast to coast.

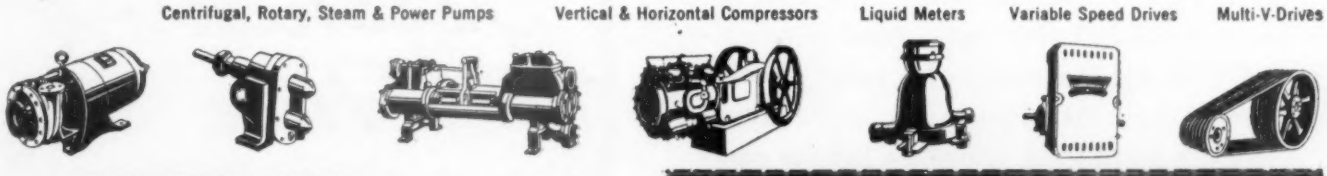


**3.** YET ALWAYS TIGHT ON THE SHAFT

## *Reading Time: 3 Minutes* — To Get Accurate Belt Ratings

From the 72-page Master Manual, containing original engineering data . . . sectionalized, loose-leaf, tabbed for ready reference . . . you can select in three minutes the right Worthington V-Belt drive. You get accurate belt ratings . . . avoiding *over*-belting and *under*-belting. Send the coupon today for your free copy! Specification and installation record sheets included.

Centrifugal, Rotary, Steam & Power Pumps | Vertical & Horizontal Compressors | Liquid Meters | Variable Speed Drives | Multi-V-Drives



WORTHINGTON *BEHIND THE NAME* WORTHINGTON

**Standard Products Division**
**Worthington Pump and Machinery Corporation**
**Harrison, N. J.**

MVG-15

*Standard Products Division*
**Worthington Pump and Machinery Corporation**
**Harrison, N. J.**

Please send me a copy of the Worthington Master Manual.

Name .....

Company .....

Address .....

# For better Blasting

## IT'S SOMETHING TO REMEMBER — EVERY DAY

Primacord consists of a continuous core of PETN within a flexible textile cover. Primacord is insensitive to fire, friction or ordinary shock, but must be detonated by means of a fuse and cap or electric blasting cap. This detonating wave moves at the rate of 20,350 feet per *second* — practically instantaneously. It acts directly upon every cartridge in the hole, giving to each the added force of a primer cartridge.

Send for the Primacord Book — it shows the way to better (and more profitable) blasting.

11

**PRIMACORD-BICKFORD**

*Detonating Fuse*

**Manufacturers of Safety Fuse since 1836**

**THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONNECTICUT**

# PORTER Diesel-Electric SWITCHERS

80-Ton PORTER Diesel-Electric Switcher

## Custom Built POWER!

You can order a PORTER Diesel-Electric Switcher with the assurance that it will be engineered, designed and built to fit the requirements of your own particular switching or hauling job. An expert knowledge of switching problems accumulated over a period of 78 years enables PORTER Engineers to design switching power that will give you the utmost in service at the lowest cost for operation and maintenance. Let us analyze your switching requirements and recommend the type of unit best fitted for the job. Such an analysis may reveal possibilities for substantial savings.

PORTER
Better Built
Equipment
Established 1866

**"CUSTOM-BUILT POWER"**

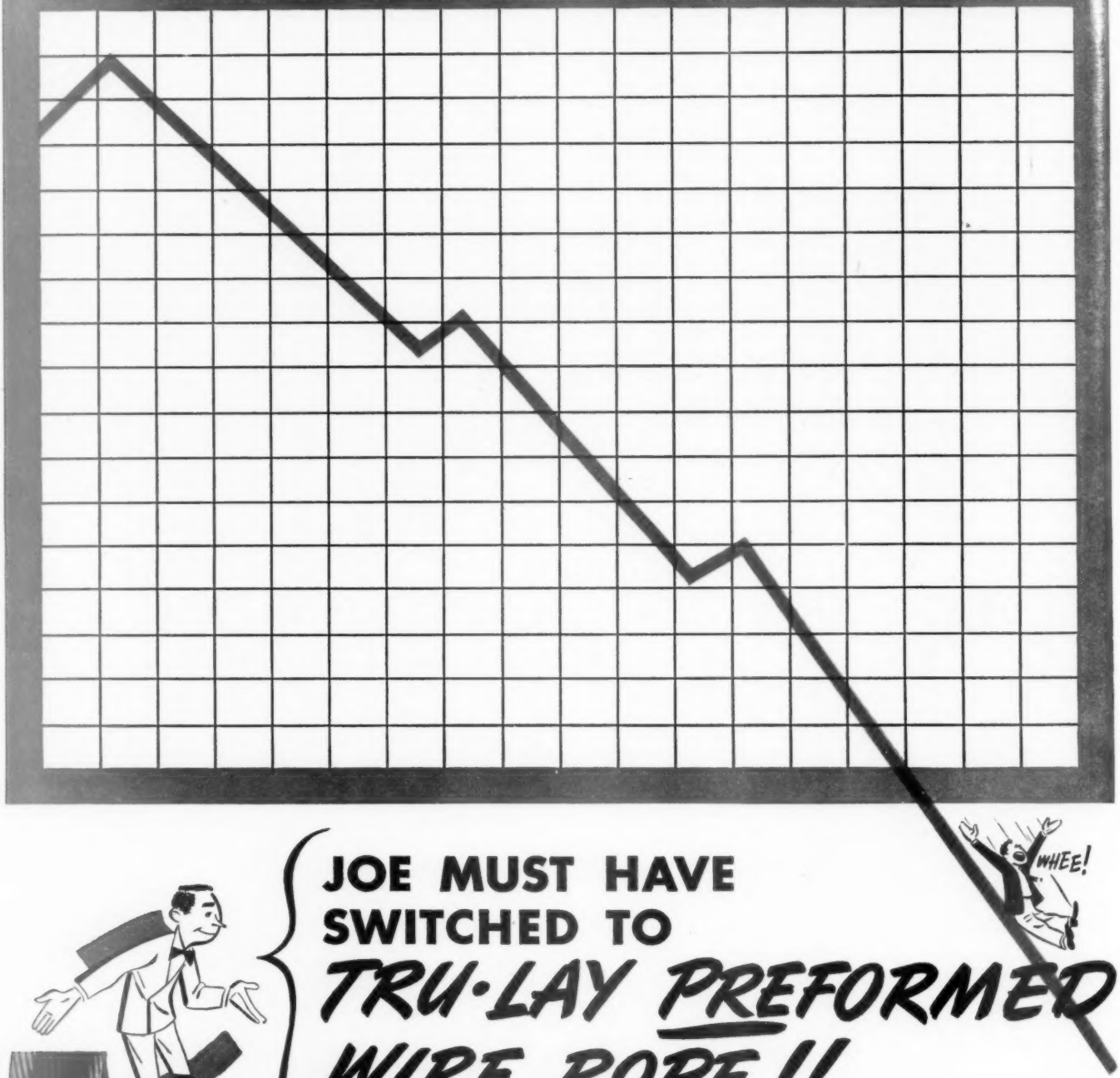
This 20 min. kodachrome sound film showing the building of a PORTER Diesel-Electric Switching Locomotive is available for exhibition at clubs, meetings, etc. Applications for booking may be addressed to the Advertising Dept.

**H. K. PORTER COMPANY, Inc.**

PITTSBURGH 22, PENNSYLVANIA

*Factories:* Pittsburgh, Pa. • Blairsville, Pa. • McKeesport, Pa.
Mt. Vernon, Ill. • Newark, N. J. • New Brunswick, N. J.

# WORKMAN ACCIDENT RECORD



## JOE MUST HAVE SWITCHED TO *TRU-LAY PREFORMED WIRE ROPE!!*

**(Yes — it's safer to handle)**

**AMERICAN CABLE DIVISION**

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma

**AMERICAN CHAIN & CABLE COMPANY, Inc.**

BRIDGEPORT • CONNECTICUT

**ESSENTIAL PRODUCTS**...TRU-LAY Aircraft, Automotive, and Industrial Controls, TRU-LOC Aircraft Terminals, AMERICAN CABLE Wire Rope, TRU-STOP Brakes, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Castings, CAMPBELL Cutting Machines, FORD Hoists, Trolleys, HAZARD Wire Rope, MANLEY Auto Service Equipment, MARYLAND Bolts and Nuts, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Steel Castings, WRIGHT Hoists, Cranes . . . *In Business for Your Safety*

Body with open or scoop end
(Right) Same body elevated.

# X-112 BODIES *and* T-4440 HOISTS *for* OPEN PIT MINING

Body with automatic
downfold tailgate.

Fleets of Trucks, equipped with Gar Wood X-112 Bodies and T-4440 Hydraulic Hoists, are hauling the biggest loads ever moved by trucks on production schedules. Lower mining costs have been made possible by speeding up the handling of overburden, ore and coal.

## SPECIFICATIONS

HOIST—Hydraulic, twin cylinder, telescopic.

PUMP—Gear type with aluminum wearplates.

POWER-TAKEOFF—2-gear single speed.

BODY—Heavy duty with pressed-steel, box-type side braces and cross members.

BODY SHELL—¼" sheet steel with 2" wood filler.

WEARPLATE—¼" with floor angles or $\frac{5}{16}$" without. Longitudinals 8-inch "H" beams.

CAB SHIELD—¼" plate.

FLOOR ANGLES—Optional.

Automatic gate opens as body elevates.

**GAR WOOD INDUSTRIES, Inc., Detroit 11, Michigan**

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

# You wouldn't put a diving suit on a *POLE VAULTER*

LAY·SET *Preformed* IS LIMBER

• Putting non-preformed wire rope on your machines is like expecting a pole vaulter to make a record when dressed in a diving suit. You shouldn't expect a wire rope that is twisted tightly and under constant tension to operate well and long.

In Hazard LAY-SET Preformed every wire and strand is pre-shaped at the mill to the exact helix it must assume in the finished rope. That's why **LAY-SET** is at ease, relaxed, more flexible, and perfectly willing to work. Being free of torsional stresses and strains, being unhampered by twisted effort, Hazard **LAY-SET** Preformed lasts longer, gives you greater dollar value. Be sure your next rope is Hazard **LAY-SET** Preformed.

Hazard **LAY-SET** Preformed Wire Rope is "in the service" on countless jobs for the Armed Forces where it is proving its many advantages. Specify it for *your* use.

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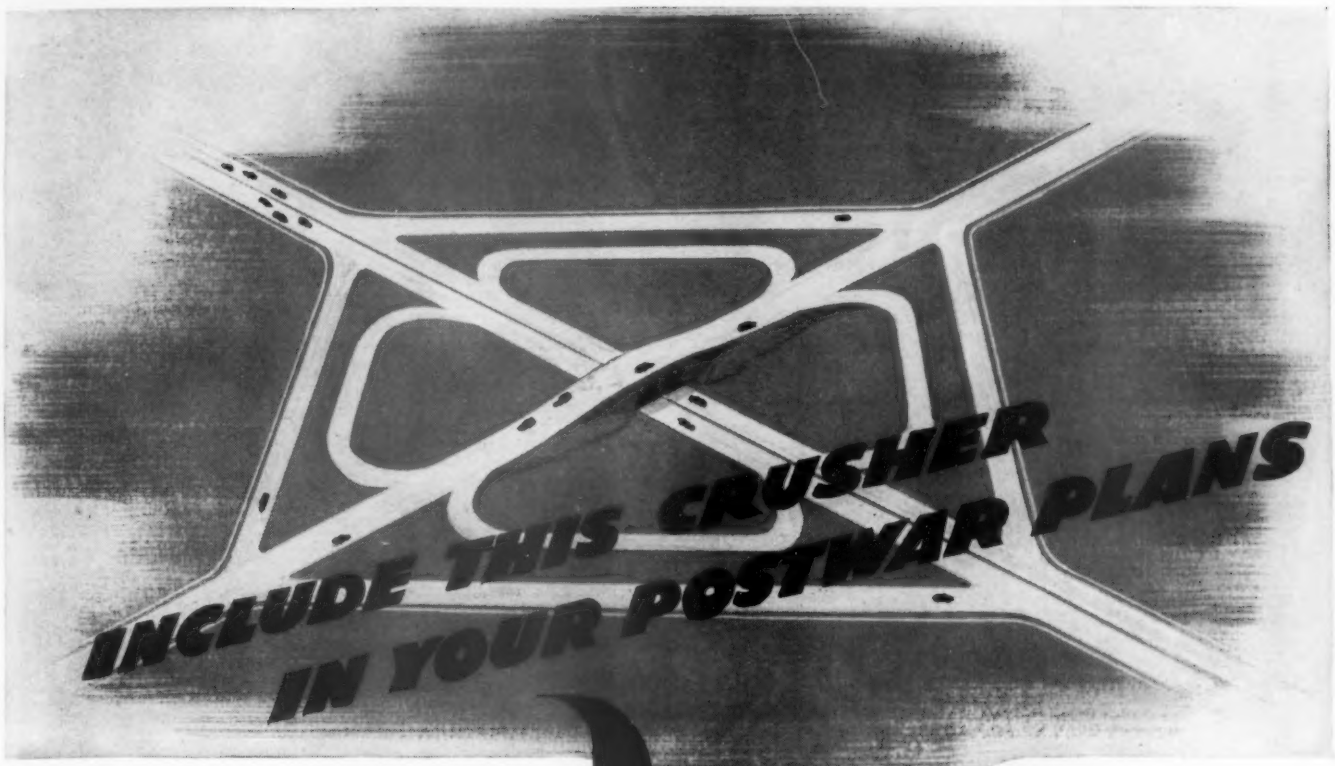


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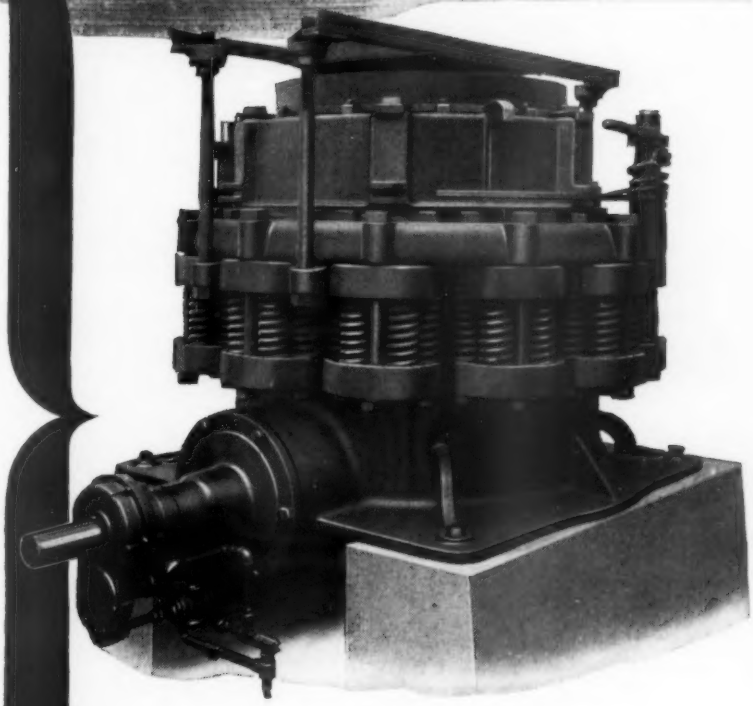

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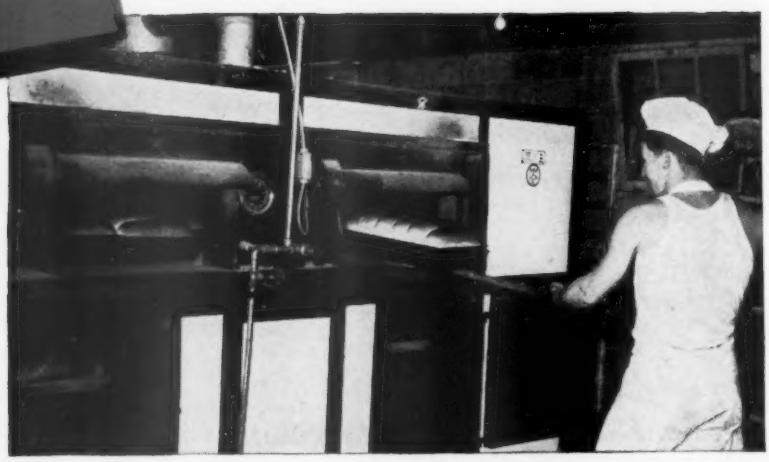

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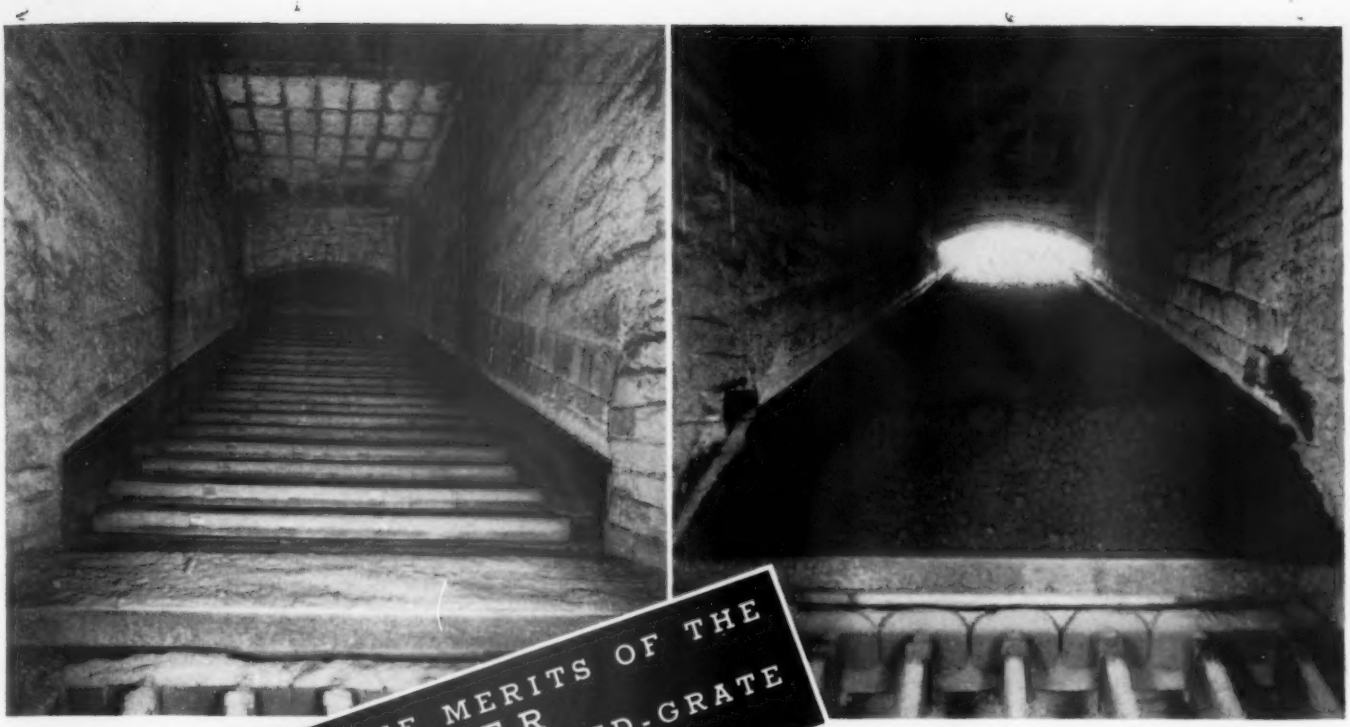

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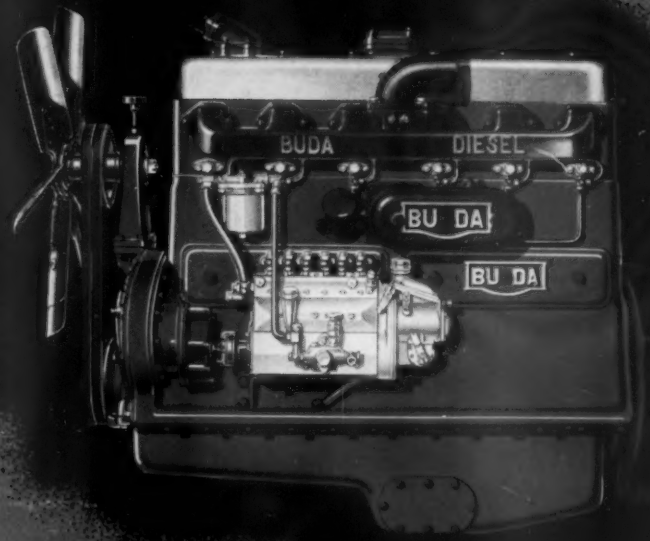


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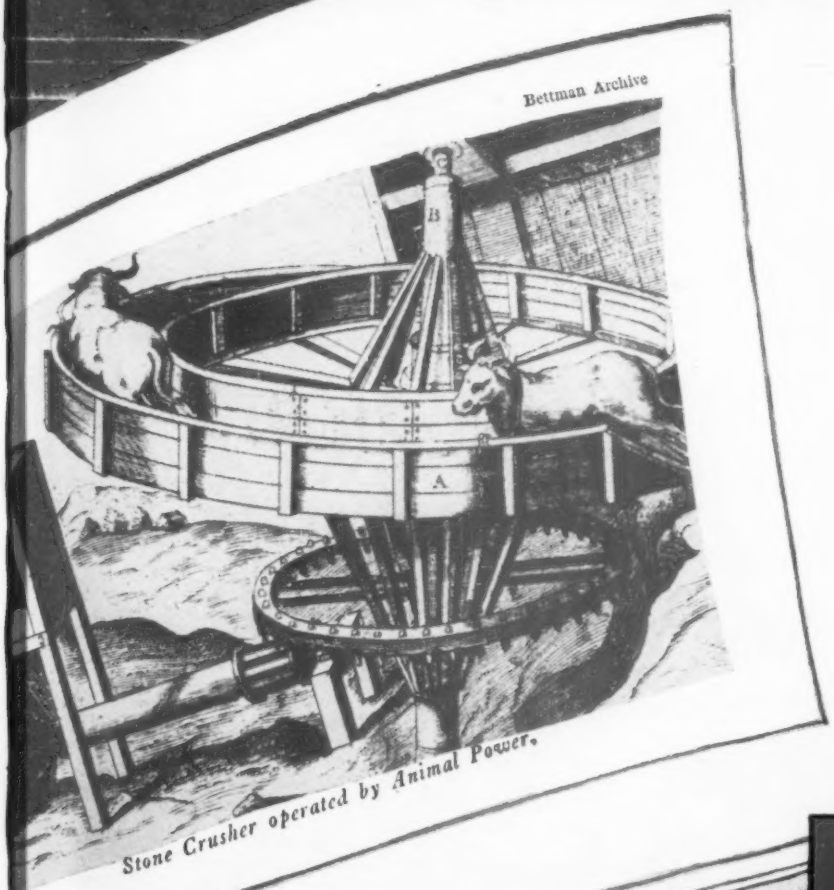


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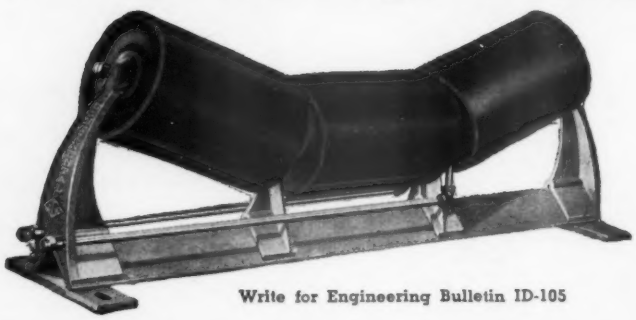

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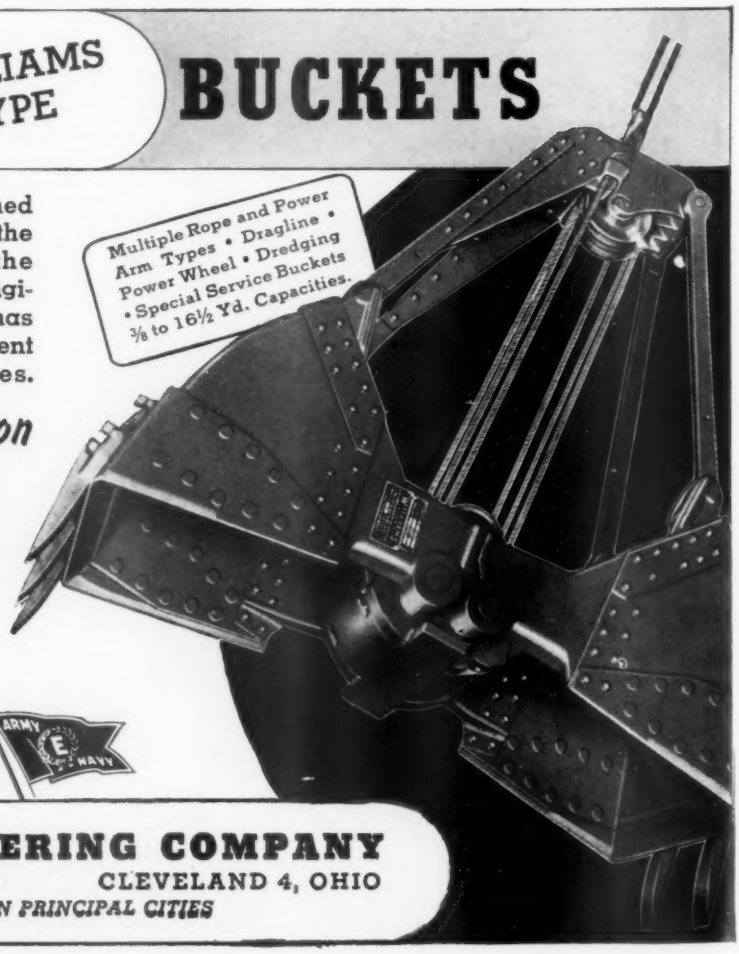


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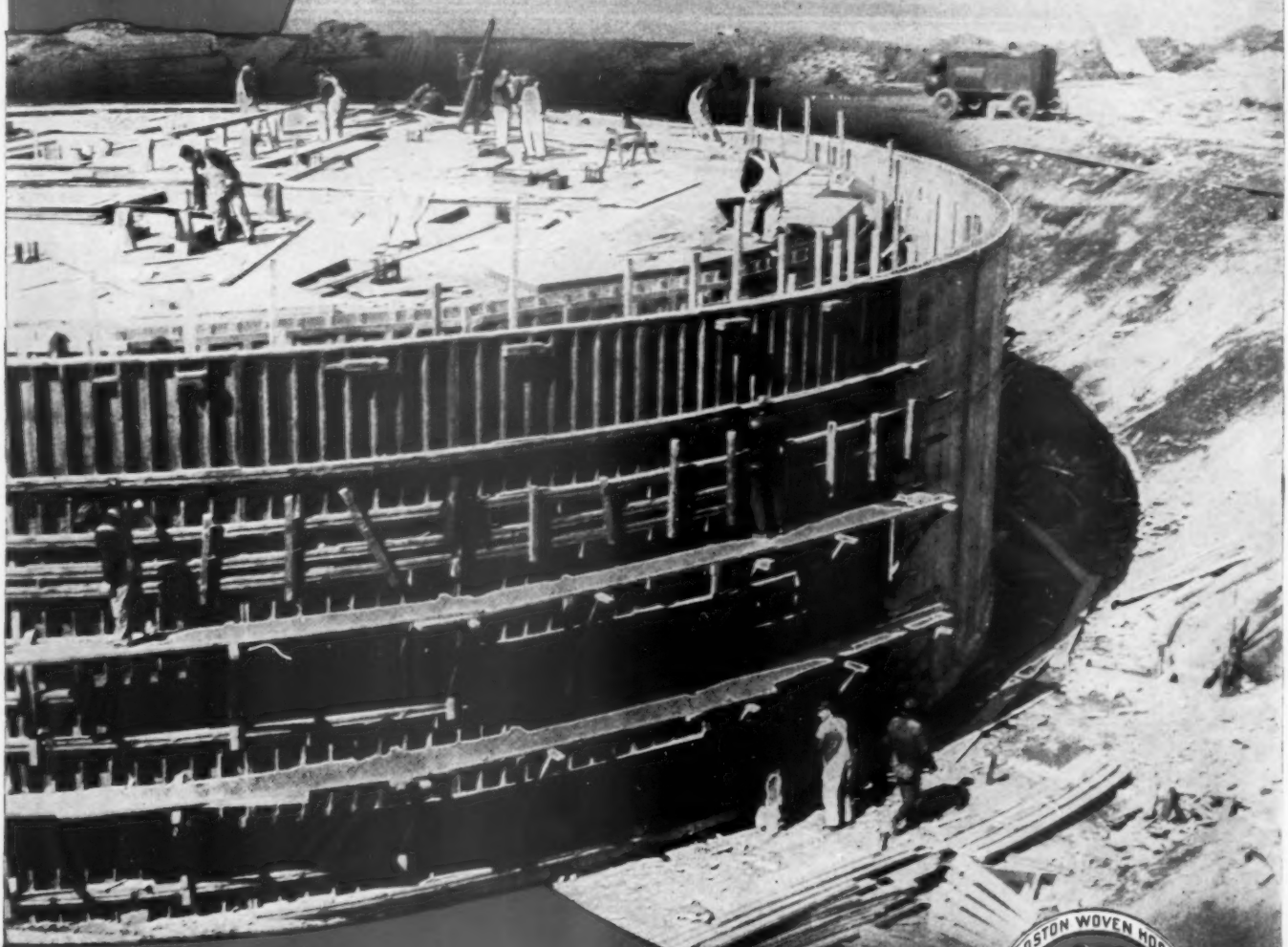

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PIT AND QUARRY

DECEMBER, 1944

Vol. 36 No. 6

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# EDITORIAL

## *For Silicosis—Prevention or Cure?*

GREAT encouragement has been given lately to those engaged in occupations involving exposure to the hazards of silicosis. Both victims of the disease and those who have not yet acquired it have been given new hope by the claims made for a new therapy which is said to have great preventive as well as curative power. Those responsible for the new technique are naturally filled with expectation that its adoption on a widespread scale will provide the relief that medical science and lay experimentation have long sought to achieve. The possibilities of the treatment have appeared to be so great that adequate capital has been provided for its development and exploitation, and one large employer has already adopted it for use in those departments of its manufacturing operations where the dangers of contracting silicosis have long been present.

Like all new proposals in the field of health, there may perhaps be an excess of enthusiasm on the part of those who have originated the new therapy and an excess of caution on the part of medical authorities who await further trials before committing themselves to its endorsement. It is always easy to be carried away by the optimism of discovery, just as it is easy to adopt the attitude of settled doubt, and time alone will provide the answer to the questions of applicability and effectiveness which naturally arise in the minds of the cautious. There may be hesitancy on the part of workers to expose themselves to a new treatment whose limitations and possible dangers may not yet be properly understood, just as there may be reluctance on the part of physicians to apply the new technique at a time when it may still be regarded as something not fully demonstrated.

It has always seemed to us that the proper approach to the reduction of the toll exacted by silicosis lies in the field of prevention rather than cure, and that the greatest possibilities will be found in that direction. Such prevention may be discovered in the field of medicine so that employees exposed to silicosis hazards may be strengthened or even immunized against them by protective inoculation or by medication through nose or throat. Such an approach commends itself naturally to those who work in the field of physiological chemistry, but it may not lead most quickly or most surely to the desired result.

We believe that greater directness and greater effectiveness may come from adoption of the engineering approach. Liberation of the free silica that constitutes the menace to the health of workers in silica-laden air is brought about by the mechanical means employed in processing silica-bearing materials. It would seem, therefore, that the most logical point of attacking the problem would be the places at or near which the silica is released to the atmosphere, at drills, crushers, pulverizers, conveyors and other processing and handling machines which set silica-bearing particles in motion and mingle them with the surrounding air. If silica-bearing dust can be controlled so that the dangerous particles can be trapped and confined with a high degree of efficiency at the points of their release to the atmosphere, the silicosis hazard may be so reduced as to constitute but an insignificant danger to the health of those who work in such surroundings. It is, of course, on this principle of attacking the problem that dust-collecting equipment has been designed and applied, and it is in this direction, we believe, that the greatest progress has been and is still likely to be made.

IT WILL be urged by some that the efficiency of modern dust-collecting equipment is not all that could be desired, that its application to some points of high silica concentration is difficult or impossible and that in the absence of such equipment workers often refuse to wear simple appliances like masks, which do to some extent reduce the danger. It is thus made to appear that not only employers but even the workers who are the potential victims of the disease are not as alert as they might be to the terrible cost of silicosis in terms of life or money. This attitude, in our judgment, is not justified by the facts. Modern dust-collecting equipment is a good business investment, whatever its relative efficiency or inefficiency, and we believe that employers faced with a silicosis or other dangerous dust hazard are ill-advised if they are encouraged to await the development of a cure instead of devoting their thought to the prevention of the hazard. To those employers with a mind for social welfare prevention makes a strong appeal because of its directness and evidence of consideration for their workers; to those more interested in the financial costs and risks it should appear equally sensible. In any suit for damages allegedly due to employment in unhealthful surroundings the defendant employer has gone a long way toward escaping responsibility for negligence if he has provided for his employees the best working conditions that modern engineering knowledge affords. Unless he has studied the dust-collecting equipment that can be applied to the problem, he has neglected to provide not only protection for his workers but protection for his business. As we said in these columns more than a decade ago, even if his employees refuse to wear the safety appliances he has provided for their use, he has strengthened his moral position immeasurably merely by making them available.

Great progress has been made in the design, efficiency and application of dust-collecting equipment and safety appliances to be worn by workers, but there is still much to be done. Now that profitable business has made the capital for such improvements available, employers will doubtless give increasing attention to solving the silicosis problem through engineering channels rather than await the outcome of trials in the use of new therapeutics.

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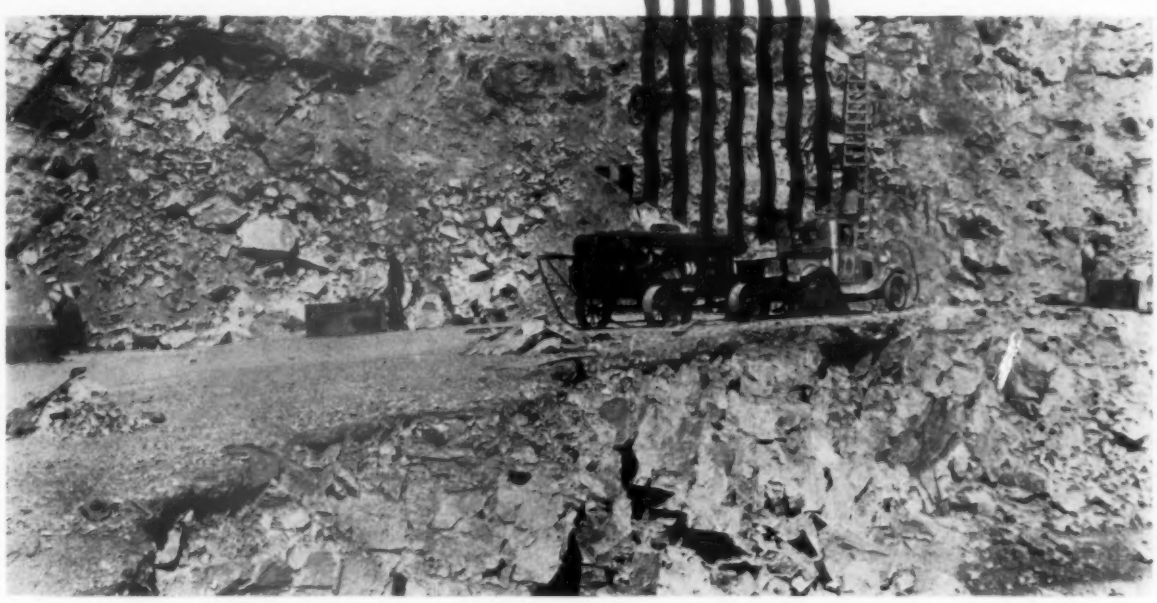
**Portable Air Compressor operating quarry drills**



*Model No. 315 SCHRAMM, with wide-rimmed steel wheels, operating drills in limestone rock quarry.*

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SCHRAMM units furnish year 'round availability for rock drilling under all working conditions.

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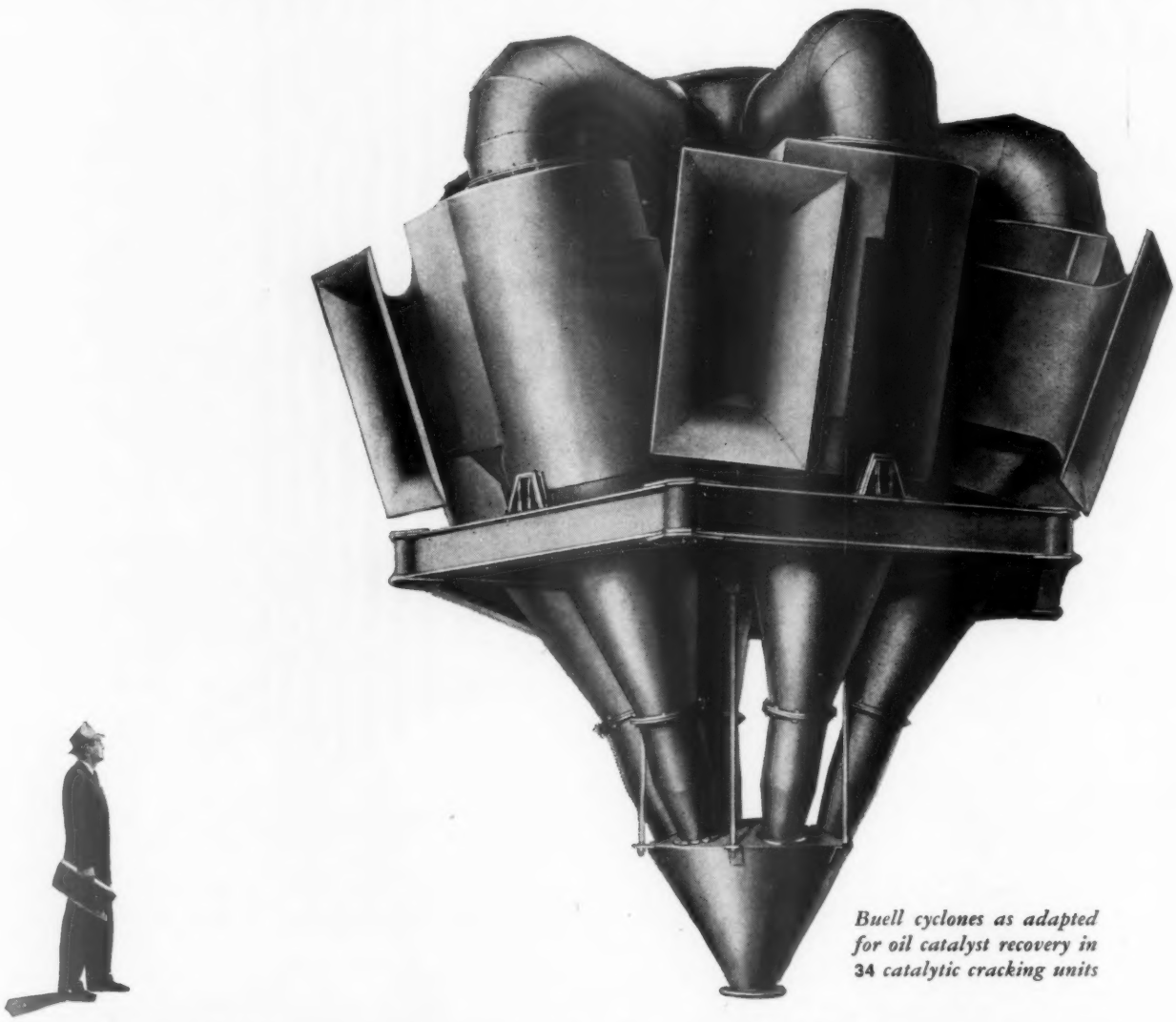

*Buell cyclones as adapted for oil catalyst recovery in* 34 *catalytic cracking units*

## Buell Dust Recovery Systems help make 100-octane gas...

"CAT CRACKER" is the oil industry's nickname for the new catalytic cracking processes now producing high-octane gas—processes calling for the highest efficiency in the recovery of catalyst dust. It is significant that so many leading oil companies have chosen Buell (van Tongeren) Dust Recovery Systems for this important work.

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Here, as in so many other fields, Buell leadership has again demonstrated its ability to solve difficult dust recovery problems.

*Maybe Buell can help your business... Write for Bulletin G-842, describing Buell equipment and its application in many industries*

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DUST RECOVERY SYSTEMS

*BUY WAR BONDS AND MAKE THE AXIS BITE THE DUST*

PIT AND QUARRY

CHICAGO DECEMBER, 1944

## 15-Mile Belt-Conveyor to Move Crushed Stone in Post-War Project

A 15-mile belt-conveyor, believed to be the longest ever conceived for the transportation of crushed stone, will be employed in the reclamation of the shore line of Santa Monica Bay, a $15,000,000 self-liquidating post-war project planned by the Los Angeles Bureau of Engineering.

Millions of tons of stone, sand and top-soil will be needed in building the new shore-line and the decision to use a long conveyor system resulted from the successful use of a similar installation which supplied the aggregates to Shasta Dam in northern California. The Shasta Dam conveyor was slightly less than 10 miles in total length.

As planned, the conveyor will carry the rock for the fill from a quarry to be opened in the mountains north of Santa Monica near the Pacific Ocean. It will skirt the shoreline past the towns of Santa Monica, Venice, Ocean Park, Playa del Rey, Redondo Beach and reach El Segundo. Shuttle and boom conveyors will be employed to distribute the material, eliminating the need for any other major equipment, according to City Engineer Lloyd Aldrich. From the dunes near El Segundo the conveyor, in reverse, will carry sand to form the beaches.

## Illinois Fluorspar Output Leads in 1943

Illinois led the nation in the production of fluorspar in 1943, mining $6,293,000 worth of the vital war material, the bureau of mines reports.

The state was fifth in all mineral production for the fourth consecutive year with an output of raw materials valued at $318,270,000.

Fluorspar is used as a flux in steel production and in the manufacture of hydrofluoric acid needed in many metallurgical processes and in the production of high-octane gasoline. The Illinois-Kentucky fluorspar field furnishes most of the nation's needs.

## Seattle Firm Buys Silica Brick Company

Purchase of one of the West's leading silica brick manufacturing companies was recently announced by the Gladding, McBean & Company through the Seattle office.

The newly acquired properties, which include the recently completed silica brick plant at Lehi, Utah, were formerly operated by the Emsco Refractories Company of Los Angeles.

Wisconsin mineral production for 1943 reached its highest peak since 1929 with $18,925,000 worth of minerals, the bureau of mines announced recently.

Leading minerals were stone, valued at more than $7,000,000; iron ore, $3,822,000; zinc, $3,108,000, and sand and gravel, $2,596,000.

## Coming Events

*December 5, 1944* — Oklahoma City. Annual Meeting, Oklahoma Mineral Industries Conference, Oklahoma Club.

*January 23-25, 1945—New York.* 29th annual convention, National Sand and Gravel Association, Hotel New Yorker.

*January 24-26, 1945—New York.* 15th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

*January 29-31, 1945—New York.* 28th annual convention, National Crushed Stone Association, Hotel New Yorker.

*January 21-24, 1945—Chicago.* 26th annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

*February 7-9, 1945 — Chicago.* Annual Meeting, National Concrete Masonry Association, Hotel Sherman.

## Henry J. Kaiser Co. Using Yosemite Plant for Cement Distribution

The cement and quarry equipment of the Yosemite Portland Cement Corporation, Merced, California, was recently sold to the Henry J. Kaiser Company. While the plant is no longer producing cement, the silos will be used as a distributing point by the Yosemite cement, a division of Permanente.

## WPB Makes Mica-Graphite Part of Minerals Division

The Mica-Graphite Division of the War Production Board will be abolished and its functions consolidated with the Miscellaneous Minerals Division effective December 2, W.P.B. recently announced. As a result the Miscellaneous Minerals Division will include the mica, fluorspar and magnesite, and non-metals sections, this last to have units controlling graphite, beryllium, tantalite and electrodes.

## New Nevada Dolomite Plant in Operation

The Nevada Magnesite Mining Company was formed recently and offices have been established at 7940 Sunset Boulevard, Los Angeles.

The company has acquired two deposits, one near Ely, Nevada, and the other at Hodge, California. Only the Hodge deposit is being worked at present where dolomite is being quarried, crushed and shipped to a California steel plant. Arthur Detloff is superintendent of the Hodge operations which are located in the Mojave Desert between Barstow and Victorville.

Albert Cobb, of Evanston, Illinois, one of the owners of The Ottawa Hydraulic Silica Company, Incorporated, recently purchased a 60-acre island in the Illinois river.

## Consumers Company Elevates Executives

Two important changes in the executive staff of the Consumers Company, by which Robert C. Fenner, now president, becomes chairman of the board and William J. Kelly becomes president of the company, were voted recently. These changes, announced by Mr. Fenner following a meeting of the company's board of directors, will become effective December 1. Mr. Kelly, who has been a director of the Consumers Company since 1942, is now president of Kelly Steel Works, Inc., and will retain his interests in that concern. Active in Chicago business circles for many years, Mr. Kelly entered the banking business in 1919 and when the Chicago Trust Company was consolidated with the National Bank of the Republic he was vice-president in charge of the former's commercial banking department. Late in 1929 he resigned his banking connections to enter the manufacturing field, becoming president of the company now known as Kelly Steel Works, Inc., in 1933.

---

In a deal involving 360 acres of land and quarry equipment, Mel Crews and Henry Hortensteen, respectively of Arcola and Gays, Illinois, recently purchased the Olin Humphrey rock quarry, 2½ miles east of Charleston in that state. After incorporation the new owners plan to continue operation of the quarry.

---

## Van Zandt Named Sales Mgr. by Allis-Chalmers

C. C. Van Zandt

The Allis-Chalmers Manufacturing Company recently announced a sales-manager appointment, according to R. C. Newhouse, manager and chief engineer of the basic industries department. It is that of Claiborne C. Van Zandt, who will have charge of sales of the crushing, cement, and mining section. Mr. Van Zandt, a graduate mechanical engineer, came with Allis-Chalmers in 1930 after several years experience with an Arkansas Cement company. He has been active particularly in the application of cement-mill machinery at Allis-Chalmers. The activities of various Allis-Chalmers sections furnishing equipment to the basic industries were recently brought into the one department for the purpose of serving these fields more effectively.

---

## Nevada Guano Mixed with Limestone as Fertilizer

Limestone, crushed and pulverized and mixed with guano obtained from a cave near Spring Valley, Nevada, will shortly be shipped to western markets as a fertilizer by a plant being established at Spring Valley by Ernest Willie.

The Spring Valley cave, a refuge for millions of bats for years, contains a huge guano deposit and the limestone is to be quarried close by. It is said to be one of the most extensive guano caves ever discovered in the United States. Large amounts of guano were formerly imported for use as fertilizer from Peru and other South American countries.

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## Canada Has Ample Rock Wool Material

There is reported plenty of dolomite rock available within a few miles of the plant of the Elmac Company, just established in St. John, N. B., for the manufacture of rock wool. A large quantity of this rock is located near the limestone quarries of the Snowflake Lime Company and Purdy & Green, in St. John.

The Eastern Lime Company, Windsor, N. S., is not only supplying lime for construction, but ground limestone for use in improving the soil for agriculture, and also grit for poultry. The latter of formula approved by the Canadian agriculture department and used on experimental farms operated by that department.

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## Talc Mining Increases in Areas of N. Carolina

The search for and mining of white talc recently showed signs of renewed activity in western North Carolina. At present three or four drill crews are prospecting the area between Andrews and the Georgia border. A mine has been opened on the property of the T. V. A. about five miles below Murphy, North Carolina, and production has begun. Just south of Murphy an operating shaft is being sunk by the Tarheel Investment Company; and ten miles away, at Marble, W. B. Hartsfield, of Atlanta, has drilled another area with good results. A shaft is also being sunk on this property.

## Pete Stauffer Dies After Long Illness

P. F. Stauffer

The many friends of P. F. ("Pete") Stauffer in the cement and other industries will be grieved to hear of his passing on November 23 after a long illness. This sad news comes as a sudden shock to his many friends as he had apparently nearly completely recovered from an attack of heat prostration which he incurred while playing golf a few months ago. He had been going to his office daily attending to his duties as vice-president of the Fuller Company, Catasauqua, Pennsylvania. He was not, however, able to be at the Drake Hotel, Chicago, on November 13, 14 and 15 during the semi-annual Portland Cement Association meeting. Representatives of the various cement machinery manufacturers have for years met at the same time and this was one of a very few from which Pete had been absent in about 30 years.

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## New $100,000 Plant for Magnesite Company

Magnesite from the Heizer-Segerstrom property 30 miles south of Lovelock, Nevada, is being shipped in two sizes, 1½- and ¾-inch material, from the new $100,000 crushing and screening plant. Reported to run 65 per cent. magnesite, the ore is handled by two power shovels and 20 heavy trucks at the rate of 500 tons daily.

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## 20 Cars Daily Output at New Arkansas Gravel Pit

A new gravel pit recently was opened two miles west of Jonesboro, Arkansas by E. L. Lahar, W. L. and J. M. Cartwright. Equipment is being set up to produce washed sand and gravel in the near future. At present both trucking and rail facilities are in operation, the latter on a rail spur that has been constructed to the pit. Ten freight cars of road gravel are being loaded daily, with 20 cars daily estimated as the maximum output.

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FRED H. PFROMMER has been appointed local auditor of the Buffington plant of the Universal Atlas Cement Company. He started with the company in 1913 as a raw material clerk.

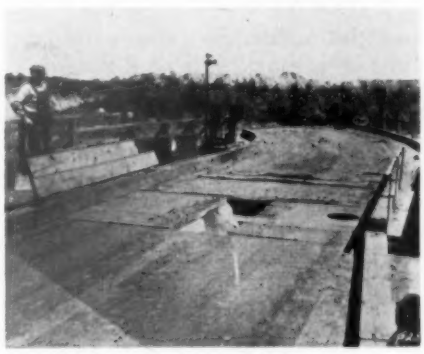
# Electric Eye Being Used to Speed Up Dumping Time

• Left: View of drive-through ramp, showing one of the cylinders activated by the electric eye that pulls back cover over the hopper.
Right: Truck shown at the moment load is being discharged into hopper. At right electric eye mechanism can be seen.

Some of the iron ore mines on the Mesabi Range in northern Minnesota are using an electric eye dumping system which could be used with equal success in quarries and gravel pits. A drive-through ramp, with an electric eye to operate a cover over the loading hopper, is being used to speed up dumping time, thus saving truck time and labor.

In the ore mines, as in this field, modern crushers and screens have stepped up plant capacity and in many cases the main problem now is to bring the material to the plant as fast as the plant can handle it. On the Iron Range in northern Minnesota they have devised a new system that is paying good dividends on the investment.

The drive-through ramp is constructed so the trucks do not have to stop and back up to dump. The ramp passes directly over the loading hopper. A solid cover over the hopper permits the trucks to drive over without delay. As the truck passes over, it stops in dumping position. At the same time it intercepts the beams from two electric eyes. Two eyes are used to avoid the possibility of a man walking through one beam and thus opening the hopper. Both beams must be intercepted simultaneously in order to open the hopper. When the beams are intercepted by the truck, two air cylinders are actuated and pull back the covers over the hopper. This leaves a large clear opening for the truck to dump into the hopper. After dumping, the truck drives away and as soon as the beams are clear again the gates are automatically closed.



Another view of the hopper with cover closed to form driveway.

In the installation illustrated here there is a manganese steel feeder at the bottom of the hopper which controls the feed from the hopper onto a vibrating scalping screen. Oversize is crushed in a large primary jaw crusher and then mixed with the throughs and conveyed to the loading tipple for loading into ore cars.

## Towell Brothers Open New Limestone Quarry

A quarry for the production of limestone is now in operation on a farm near West Lebanon, Indiana. It is owned and operated by the firm of Towell and Towell, which consists of Harry E. and James Towell of Kingman and Veedersburg, respectively, both of whom have had several years experience in this work. Convinced that a sufficient deposit of lime will be available to last for some time, the Towells have installed loaders and other machinery so that they can service Warren county farms.

## Arkansas Bauxite Output Cut in 1944

The U. S. Bureau of Mines in a recent announcement outlined the reasons for curtailment of Arkansas's bauxite production. They were: existence of stockpiles equal to a year's consumption at present rates; recent cuts in aluminum production, which decreased the monthly demand for bauxite by 110,000 tons between the last quarter of 1943 and the first quarter of 1944. Production in the first quarter of 1944 was 816,426 short tons; in the last quarter of 1943 it was 1,711,228 tons.

If the samples of asbestos which Fred A. Mett, president of the Powhatan Mining Company, and J. C. Kempvanee, asbestos buyer of Auburn, California, recently took to the states from Juneau, Alaska, for a mill test, prove worth while, Alaska may have a new industry in this material.

# WASHINGTON NEWS LETTER

another P AND Q exclusive

IN THE recent elections President Roosevelt won a vote of confidence from the American people. How much of this vote was due to reluctance to remove the Commander-in-Chief in war time and how much to approval of the President's policies, it is difficult to say. The most important clue, however, seems to lie in the unusual disregard for party lines and the high degree of selectivity manifested by the voters in weeding out leading isolationist and anti-labor figures in the House and Senate, and electing and re-electing more progressive or international-minded legislators. Of course, this was not universally true. A number of extreme reactionaries and confirmed isolationists still remain. However, through the changes that have been effected in the November elections and in the primaries held earlier this year, and in addition, through general recognition of the clearly expressed sentiment of the people, the new Congress will be a considerable improvement over the old, especially from the point of view of effective coöperation between the legislative and executive branches of the government.

The inroads made into isolationist strength in the Senate are perhaps most significant because of the treaty ratification power of that body. For example, the terms of 14 Senators who voted against the Lend-Lease Act expire in January. Of these, only five will reappear in the new Congress; three were defeated in the primaries, four ran for re-election and were beaten, and two, who did not run for renomination, will be succeeded by strong supporters of the President's foreign policy.

It is hard to believe, as some quarters have claimed, that the campaign served to unite the nation. The inevitable accusations, exaggerations, distortions, and slander, particularly in the Presidential race, can only have had the opposite effect. Nevertheless, the campaign did serve to focus public attention and stimulate widespread thinking on the fundamental nature of the domestic and international problems the country faces; and if, as most Washington observers believe, the apparent care with which the nation's record number of votes were cast reflects an increased public awareness and appreciation of what is needed to solve these problems, the beneficial effects of the campaign would seem to outweigh the damage done.

With only a few weeks to go before yielding the Capitol to its successor, the Seventy-Eighth Congress will devote itself to the completion of legislation already initiated, and is not likely to undertake anything new or controversial. In the meantime the President is taking steps to set his official house in order. Having persuaded Mr. Byrnes to remain as O.W.M. Director until the end of the war in Europe, the President is trying to do the same with several other top administrators who are anxious to return to private life, including Davis, Taylor, and Graham, public members of the War Labor Board, and Leo Crowley, head of the Foreign Economic Administration. Strong pressure is being exerted upon the President to rejuvenate his Cabinet, and several changes will shortly be made. At 73, Mr. Hull, who has been hospitalized for several weeks, is not considered sufficiently active for the extremely difficult responsibilities of the State Department. The same objections have been raised against Jesse Jones as Commerce Secretary. Mrs. Perkins is likely to be replaced as Secretary of Labor as part of a long-expected general reorganization of the government agencies handling labor problems; John Steelman, aggressive head of the Conciliation Service, who has the unanimous support of management and labor groups, is the leading candidate to succeed her.

Much of the President's time in recent weeks has been devoted to the vexing problem of what to do with Germany after the war. Present plans call for tripartite occupation with headquarters in Berlin, and with the Soviet Union charged with the administration of East Prussia, Britain to administer the northern part of Germany, and the United States the southern part. A possibility exists that the triumvirate will be expanded to include France. The relatively slow progress of Allied forces on the Continent in the last few weeks has provided additional time for the maturation and refinement of plans dealing with the multitudinous social, economic, and political problems which the occupation authorities will have to meet. The best talents in Washington have been mobilized for this planning work and, although differences of opinion have developed on such questions as territorial changes, reparations, economic organization, and transfers of industry, substantial agreement has been reached in the formulation of basic United States policies. In those areas where differences still exist, final decisions will shortly be made by the President, who throughout has indicated a much more level-headed and sane approach to the whole problem than most of his advisers.

Another important group of problems relates to international economic negotiations. For example, intensive discussions are now under way as to the future of Lend-Lease after the fall of Germany. The British are committed to full participation in the Pacific war, and feel that United States economic aid should continue on the same basis as under a two-front war. Such an arrangement, by allowing the British to devote a greater portion of their resources to peace-time production, would permit the reconversion of the British economy at about the same pace as our own. However, a large proportion of British peace-time goods is to be produced for export and the argument has, therefore, been raised that under the proposal we would be providing, either directly or indirectly, increased competition with American traders for the same foreign markets. This question is of particular significance because it involves the attitude of the United States toward the economic problems of other nations where our own immediate interests may be adversely affected.

**GYPSUM AND LIME PRODUCTS.**—Producers of lime or gypsum products may sell to other lime or gypsum producers at prices above their present ceilings after October 31, 1944, the Office of Price Administration announced October 30, provided the following conditions have been fulfilled:

(1) Both the buyer and seller must be producers of lime or gypsum products;

(2) The buying producer must resell the commodity in the same form as purchased from the selling producer; and

(3) Any increase in price must be absorbed by the buying producer and may not be reflected, directly or indirectly, in the resale price of the commodity.

Before the first sale or delivery is made under such an agreement, the buyer must submit to the O.P.A. the name of the specific lime or gypsum products involved in the sale, the name of the buying and selling manufacturers, and a statement that the price agreed upon will not result in an application for adjustment or a petition for amendment.

The new action will make it possible for manufacturers who actually produce lime or gypsum products to continue to serve other manufacturers of related products who resell the commodities under their own trade names.

Both lime and gypsum products are produced by a large number of manufacturers. Some produce and sell both products, while others, who produce only gypsum or an incomplete line of lime products, purchase lime products for resale, and are known as producers of these products, which they resell.

These buying producers—as they are recognized in the trade—desire to present to dealers in the products a complete line of materials and buy from the actual producer items missing from their own lines.

In the past the inter-producer sales have been encouraged by selling producers since the usual large orders from the buying manufacturers provided fill-ins for slack production periods and resulted in more widespread distribution of products. These sales were usually made between producers at prices below jobber and dealer prices.

Under the regulation establishing ceilings for the products present prices in effect are the highest price for each manufacturer during March 1942. Since March 1942, increased manufacturing costs for lime products have made it impossible for some manufacturers to sell to buying producers under present ceilings without incurring hardship.

The new action will permit the continuance of the inter-producer sales, which are useful channels of distribution, without increasing the price of the products to the ultimate user.

(Amendment No. 60 to Order A-1 Under Maximum Price Regulation No. 188 —Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective October 31, 1944.)

**LIMESTONE TRUCK TIRES.**—In answer to a specific question, addressed by PIT AND QUARRY to the War Food Administration, J. C. Winter, chief, Transportation Conservation Division, Marketing Facilities Branch of that agency has written under date of November 4:

An interpretation has been made that lime and limestone for agricultural use, and other fertilizers, are included in O. D. T. Code No. 51 under the description "farm supplies", which are given a Class 2 rating over-the-road, Class 2 wholesale services, and Class 3 in retail services.

The *Essentiality List of Truck and Bus Motor Vehicle Services,* issued by the War Food Administration and the War Production Board July 22 (see *P & Q,* September, 1944, pages 68 and 69), contained an item, *31a Navy, military, industrial and agricultural chemicals,* in which agricultural limestone was said by that agency to be included and thus entitled to a 2A rating for truck tires. On August 28 (*P & Q,* October, 1944, page 55) this list was revised by the W. P. B. and the W. F. A. so that materials formerly given a 2A rating were transferred to Class 1. About the same time agricultural limestone was shifted from the agricultural chemicals group (31a) to the farm supplies group (51), but many tire rationing boards did not recognize the change. To clarify the situation the inquiry referred to in the opening paragraph was made with the result given.

**LIMING MATERIALS PRICES.**—The Office of Price Administration issued on October 7, 1944, a revised price regulation affecting liming materials: ground or pulverized limestone (agstone), limestone screenings and meal, burned lime, hydrated lime, air-slaked lime, burned or ground mollusk shells, calcareous and dolomitic fertilizer fillers, marl, slag, and by-product liming materials. The new regulation, known as Revised Maximum Price Regulation Number 386, is reproduced in full below:

PART 1367—FERTILIZERS
[RMPR 386]
AGRICULTURAL LIMING MATERIALS

Maximum Price Regulation 386 is redesignated Revised Maximum Price Regulation 386 and is revised and amended to read as set forth herein. Revised Maximum Price Regulation 386 establishes maximum prices for sellers of agricultural liming materials.

In the judgment of the Price Administrator, the maximum prices established by this revised regulation are and will be generally fair and equitable and will effectuate the purposes of the Emergency Price Control Act of 1942, as amended, the Stabilization Act of 1942, as amended, and Executive Orders 9250 and 9328. So far as practical, the Price Administrator has advised and consulted with the members of the industry affected by this revised regulation.

Such standards and specifications as are used in this revised regulation were, prior to such use, in general use in the industry affected.

A statement of the considerations involved in the issuance of this revised regulation has been issued simultaneously herewith and filed with the Division of the Federal Register.

REVISED MAXIMUM PRICE REGULATION 386—AGRICULTURAL LIMING MATERIALS

ARTICLE I—SCOPE AND MISCELLANEOUS PROVISIONS OF THE REGULATION

SECTION 1. *Applicability*—(a) *In general.* Except as provided in paragraph (b) of this section with reference to emergency sales to the United States and its agencies and paragraph (c) of this section with reference to export sales, this regulation shall apply to all sales of agricultural liming materials, whether sold for immediate or future delivery, within the District of Columbia and the 48 States of the United States.

(b) *Emergency purchases.* This regulation shall have no application to any purchases by the United States or any of its agencies under such circumstances of emergency as to make immediate delivery imperative and as to render it impossible to secure or unfair to require immediate delivery at the maximum price which would otherwise be applicable if such purchases and deliveries are made pursuant to the provisions of section 4.3 (f) of Revised Supplementary Regulation 1 to the General Maximum Price Regulation, as amended; *Provided, however,* That the Administrator may, by order, waive the reporting of any part of the information required by section 4.3 (f) in connection with a particular purchase or group of purchases upon determining that such information may not reasonably be required under all the circumstances, and he may, in lieu thereof, require the reporting of other information more suited to the circumstances.

(c) *Export sales.* This regulation shall have no application to export sales. The maximum price of such sales shall be determined in accordance with the provisions of the Second Revised Export Price Regulation.

SEC. 2. *Sales at other than maximum prices*—(a) *Prohibition.* Regardless of any contract or obligation, no person shall sell or deliver, and no person, in the course of trade or business, shall buy or receive agricultural liming material at a price above the maximum price established by this regulation for such sale, nor shall any person agree, solicit, offer or attempt to do any of the foregoing. This prohibition, however, is subject to the provision for adjustable pricing contained in paragraph (b) of this section, the exception for emergency purchases by the United States and its agencies contained in paragraph (b) of section 1 and the exception for export sales contained in paragraph (c) of section 1.

(b) *Adjustable pricing.* Any person may agree to sell at a price which can be increased up to the maximum price in effect at the time of delivery, but no person may unless authorized by the Office of Price Administration, deliver or agree to deliver at prices to be adjusted upward in accordance with action taken by the Office of Price Administration after delivery. Such authorization may be given when a request for a change in the applicable maximum price is pending, but only if the authorization is necessary to promote distribution or production and if it will not interfere with the purposes of the Emergency Price Control Act of 1942, as amended. The authorization may be given by the Administrator or any official of the Office of Price Administration having authority to act upon the pending request for a change in price or to give the authorization. The authorization will be given by order, except that it may be given by letter or telegram when the contemplated revision will be the granting of an individual application for adjustment.

(c) *Lower prices.* Prices lower than the maximum prices established by this regulation may, of course, be charged or paid.

SEC. 3. *Evasion.* The price limitations set forth in this regulation shall not be evaded whether by direct or indirect methods, in connection with any offer, solicitation, agreement, sale, delivery, purchase, or receipt of or relating to agricultural liming materials, alone or in conjunction with any other commodity, or by way of commission, service, transportation, or other charge, or discount, premium, or other privilege, or by tying agreement or an agreement requiring the buyer to sell any commodity in return, or other trade understanding or by any other means.

SEC. 4. *Transfers of business or stock in trade.* If the business, assets or stock in trade of any business are sold or otherwise transferred after the effective date hereof, and the transferee carries on the business, the maximum prices of the transferee shall be the same as those to which his transferor would have been subject if no such transfer had taken place, and his obligation to keep records sufficient to verify such prices shall be the same. The transferor shall either preserve and make available, or turn over to the transferee all records of transactions prior to the transfer which are necessary to enable the transferee to comply with the record provisions of this section.

SEC. 5. *Records and reports.* (a) Every person who offers, agrees to sell, sells, or delivers agricultural liming materials shall keep for inspection by the Office of Price Administration, for so long as the Emergency Price Control Act of 1942 remains in effect, a complete and accurate record of every such offer, agreement, purchase, sale or delivery.

(b) Persons affected by this regulation shall submit such reports to the Office of Price Administration as it may from time to time require, subject to the approval of the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

SEC. 6. *Enforcement.* Persons violating any provisions of this regulation are subject to the criminal penalties, civil enforcement actions, suits for damages and proceedings for suspension of licenses provided for by the Emergency Price Control Act of 1942 as amended.

SEC. 7. *Licensing.* The provisions of Licensing Order No. 1, licensing all persons who

make sales under price control, are applicable to all persons subject to this regulation. A person's license may be suspended for violations of the license or of any one or more applicable price schedules or regulations. A person whose license is suspended may not, during the period of suspension, make any sale for which his license has been suspended.

SEC. 8. *Protests, petitions for amendment and applications for adjustment*—(a) *Protests and petitions for amendment.* Any person desiring to file a protest against or seeking an amendment of any provision of this regulation may do so in accordance with the provisions of Revised Procedural Regulation No. 1, issued by the Office of Price Administration.

(b) *Applications for adjustment.* The Price Administrator may adjust the maximum price established by this regulation for any producer of agricultural liming material who shows in an application for adjustment (1) that there exists a shortage of supply; (2) that his maximum price will not permit him to continue his production of agricultural liming material without subjecting him to substantial hardship; (3) that the loss of the producer's production would force purchasers to resort to higher priced sources of supply; and, (4) that the provision of section 10, Rule 3 of this regulation does not grant him the required measure of relief: *Provided*, That in no instance may the average base period (see section 9 (f)) f. o. b. plant price per ton be increased by an amount in excess of the difference between the production cost per ton during the base period, computed in accordance with the provisions of Rule 3 (i), below, and the similarly computed production cost per ton for the most recent calendar 3-month period. Such an application for adjustment must be filed in accordance with the provisions of Revised Procedural Regulation No. 1.

SEC. 9. *Definitions.* When used in this regulation, the term:

(a) "Person" includes an individual, corporation, partnership, association, or other organized group of persons or legal successor or representative of any of the foregoing and includes the United States or any agency thereof, or any other government or any of its political subdivisions or any agency of any of the foregoing.

(b) "Producer" means any person who mines, quarries, crushes, grinds or pulverizes, burns, hydrates, digs or excavates, or in any other manner processes material containing calcium or calcium and magnesium and offers such for sale as an agricultural liming material.

(c) "Agricultural liming materials" means all of the various kinds and grades of materials containing calcium or calcium and magnesium compounds when sold for spraying or dusting purposes or for use as soil amendments or conditioners including, but not limited to, ground or pulverized limestone, limestone screenings and meal, burned lime, hydrated lime, air-slaked lime, burned or ground mollusk shells, calcareous and dolomitic fertilizer fillers, marl, slag and by-product liming materials such as sugar house lime and acetylene lime waste.

(d) "F. o. b. plant" means loaded on railroad freight car, truck, barge, boat or other conveyance at the point of production.

(e) "Class of purchaser" means functional class such as farmer, trucker, wholesaler, retailer, cooperative association, or Departments or Agencies of the United States Government.

(f) "Base period" means the calendar year 1941, or the producer's fiscal year ending in 1941, or the first full 12-month period subsequent to January 1, 1941 that a producer was engaged in the production and sale of agricultural liming material.

ARTICLE II—MAXIMUM PRICES

SEC. 10. *Sales by producers.* (a) The maximum price which a producer may charge on sales of bulk agricultural liming materials f. o. b. his plant shall be the highest price determined according to Rule 1, Rule 2, or Rule 3 and paragraphs (b) and (c), of this section, as the producer chooses. For sales in bags, Rule 4 shall be used. For sales at stockpile or railroad siding, Rule 5 shall be used. For sales on delivered, or delivered and spread basis, Rule 6 or section 12 shall be used. Prices of new producers shall be determined under section 13 below.

RULE 1. *Maximum prices based on March or April 1942 ceilings.* The maximum price determined according to this rule shall be the highest f. o. b. plant price the producer charged each class of purchaser for the same or similar kind and grade during March or April, 1942. (If a producer had no f. o. b. plant price or no bulk price during this period see paragraph (b) or (c) below.)

RULE 2. *Maximum prices based on AAA awards.* The maximum price calculated according to this rule shall be the f. o. b. plant price at which an award was made to the producer by the Agricultural Adjustment Agency between September 12, 1942, and May 15, 1943. If sales to other classes of purchasers were customarily made at higher or lower prices than such AAA award price, the higher price may be maintained or the lower price shall be maintained as the case may be, by adding to or deducting from such award price the customary dollar-and-cent differential. (If a producer had no f. o. b. plant price or no bulk price during this period see paragraph (b) or (c) below.)

RULE 3. *Maximum prices based on base period average prices.* Instead of following Rule 1 or 2 the producer may calculate a new maximum f. o. b. plant price for bulk material in the following manner:

(i) Compute the cost per ton to produce agricultural liming material during the base period (see section 9 (f)) by adding the applicable items of production cost (such as labor, raw materials, power, heat, maintenance, repair and depreciation of equipment, rentals, insurance, and taxes, except income and excess profits taxes) and dividing the total by the number of tons produced during such period. (If it is impossible for the producer to segregate from his records the production cost of agricultural liming material he may base this calculation upon the entire output of his plant of all lime or limestone materials. In case a producer operates more than one plant he may make the computation for each plant separately or he may combine the applicable data from all his plants into a single computation.)

(ii) Compute the cost per ton to produce bulk agricultural liming material in the manner described under (i) above for the six-month period ending April 30, 1943.

(iii) Subtract the figure obtained under (i) above from the figure obtained under (ii) above and add the difference to the average bulk, f. o. b. plant price during the base period to each class of purchaser. (If a producer had no f. o. b. plant price or no bulk price see paragraph (b) or (c) below.) The amount so added may not exceed either 30 cents per ton or 15% of the lowest average base period price charged to any class of purchaser, whichever is greater.

(iv) Every producer who follows this rule in computing a maximum price shall submit to the Office of Price Administration, Washington, D. C., in writing, the detailed figures upon which his computation is based.

RULE 4. *Maximum prices for sales in bags.* For sales of agricultural liming materials in bags the producer may add to the maximum bulk f. o. b. plant price as otherwise determined hereunder, 25 cents per ton plus a sum not in excess of the established maximum price, at the time of the sale of agricultural liming material, for the bags containing the ton: *Provided*, That, where a producer charged during March or April 1942 a differential for bags and bagging higher than that permitted above, such higher differential may be maintained.

RULE 5. *Maximum prices for sales at stockpiles or railroad sidings.* Where the producer establishes a stockpile at a place other than in the vicinity of his plant, or ships from a railroad siding not in the vicinity of his plant, he may add to the maximum price as otherwise determined hereunder, an amount equal to the actual cost to him of handling and transporting the material from his plant to the stockpile.

RULE 6. *Maximum prices for a delivered or delivered and spread sale.* The producer's maximum price under this rule shall be his applicable f. o. b. plant, stockpile or railroad siding price as otherwise established hereunder, plus an amount equal to his handling and delivery cost, plus his cost of spreading, if any. (For flat delivered price, see section 12 below.)

(b) *Calculation of an f. o. b. plant price from a delivered price.* Where the producer had no f. o. b. plant price to which to apply Rules 1, 2 or 3 above his f. o. b. plant price shall be calculated by deducting from his delivered, or delivered and spread, price an amount equal to his average cost of delivery, or political subdivision in which his plant is liming materials, during the applicable period. Where the producer's delivered, or delivered and spread, prices varied among delivery areas, he shall calculate his f. o. b. plant price by deducting from such delivered price in the county or political subdivision in which his plant is located, or nearest thereto, an amount equal to his average cost of delivery, or delivery and spreading, of the material in that delivery area, during the applicable period.

(c) *Calculation of a bulk price from a bagged price.* In case a producer had no price for sales of agricultural liming material in bulk he may compute a bulk price by deducting from his bagged price the cost of bags and bagging during the applicable period.

SEC. 11. *Sales by non-producers of agricultural liming materials*—(a) *Sales at wholesale.* The maximum price that may be charged for agricultural liming material when sold by a person who did not produce the material to a person other than the ultimate consumer shall be the sum of the following:

(1) The maximum price that the producer could have charged the seller for the material as determined under section 10, above, plus

(2) The cost to such person of handling and transporting the material to the point of delivery, plus

(3) The customary or average dollar and cents markup over such costs which he charged during the base period (see section 9 (f) ).

(b) *Sales at retail.* The maximum price that may be charged for agricultural liming material on sales to the ultimate consumer or a department or agency of the United States Government, when sold by a person (including truckers) who did not produce the material, shall be the sum of the following:

(1) The maximum price that the producer or wholesaler could have charged the seller for the material, plus

(2) The cost to such person of handling, transporting and/or spreading the material, plus

(3) The customary or average dollar and cents markup over such costs which he charged during the base period (see section 9 (f) ).

SEC. 12. *Sales at flat prices.* Any seller of agricultural liming materials may charge for deliveries within any single county or political subdivision thereof, one maximum flat delivered, or delivered and spread price. In calculating his maximum flat price, the seller shall include therein his handling and delivery cost, and his costs of spreading, if any, by listing all, or a representative group of, his prospective deliveries and spread sales, in the particular county or political subdivision thereof, and averaging his actual or estimated costs of such handling and delivery, or costs of delivering and spreading, as the case may be, in such county or political subdivision thereof.

SEC. 13. *Sales by new sellers.* Where a person operates at a new point of production or commences the business of selling agricultural liming materials after the effective date of this regulation, his maximum price to each class of purchaser is the maximum price for a like sale of the same or a similar kind or grade of agricultural liming materials of his most closely competitive seller of the same class: *Provided*, That, where a producer uses portable equipment (i. e., mounted on wheels so that it may be moved from one site to another) his maximum price at the new point of production shall be his established maximum price at his nearest other point of production or the maximum price of his closest competitor at the new point of production who likewise uses portable equipment, whichever is lower. Such new seller shall report to the Office of Price Administration, Washington, D. C., the new maximum price so established and the name and address of the competitor whose price was adopted.

This regulation shall become effective this 12th day of October 1944.

NOTE: The record-keeping and reporting provisions of this regulation have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

Issued this 7th day of October 1944.

CHESTER BOWLES,
*Administrator.*

**TRACTOR REPAIR PARTS.**—Control over the sale of non-critical repair parts for track-laying tractors was relaxed October 23 by the War Production Board by an amendment to Order L-53-b. Manufacturers of track-laying tractors who also manufacture repair parts are no longer required to reserve 65 per cent. of all repair-parts production for the military. This will result in a better flow of non-critical parts for civilian use, simplify producers' scheduling of total parts production, and still assist the military in obtaining urgently needed parts.

Quotas of shipments to dealers in the United States and Canada were formerly set at $10,000 worth of parts in any calendar quarter, or 50 per cent. of total shipments during the preceding two quarters, whichever was greater. This quota provision, designed to prevent the building up of large inventories, is no longer considered necessary.

**WPB-1319.**—New instructions for the proper filling in of Form WPB-1319 have been issued by the W. P. B. The pamphlet, dated October-November, 1944, is too lengthy for reproduction here but the most essential requirements are given below. There follows first a list of most of the types of equipment required by the nonmetallic-mineral industries, preceded by the number of the WPB order dealing with the equipment and followed by the corresponding Budget Bureau number.

| WPB Order | Classes of Equipment and Items Controlled | Budget Bureau Number |
|---|---|---|
| L-53 | Tractors, track-laying, unused | 12-R 1862.3 |
| L-53-b | Tractors, track-laying, repair parts | 12-R 1837.3 |
| L-112 | Trucks, industrial, power, new and used | 12-R 1895.5 |
| L-144 | Laboratory equipment, new | 12-R 1869 |
| L-190 | Scales, balances, and weights, new | 12-R 1888 |
| L-192 | Construction machinery, new | 12-R 1812.3 |
| | Construction machinery repair parts, new | 12-R 1850.3 |
| L-196 | Construction machinery, used, as listed in Schedule A of Order L-196 | 12-R 1871.1 |
| L-257, Dir 2 | Wheel-type tractors, new | 12-R 1882.1 |
| M-221 | Bags, new, cotton | 12-R 1810.1 |
| P-56 | Mining equipment, new, for all mines and for serialized smelters. (This includes all equipment listed herein used by mines whether or not controlled by the Mining Division.) | 12-R 1870.1 |

**Special instructions have been given for each of the types of equipment listed above and, in so far as is possible, these are given below:**

These instructions supersede previous issues of this pamphlet and are in accordance with orders of the War Production Board as of the 15th of September. The current issue of this pamphlet may be obtained from any WPB office. Applications not filled in in accordance with these instructions may be returned to you for additional information.

General Instructions

*1. *Use of the form.* WPB-1319 (Rev. 1/20/44) is a form used to apply to the War Production Board for permission to transact in equipment. It is used only when specified by the WPB orders listed on page 2. The equipment for which authorization may be requested on the form is listed on page 2 ff. No other equipment may be applied for on WPB-1319 except as stated in the special instruction for Priorities Regulation 24 below.

Detailed instructions, listed alphabetically by name of equipment, begin on page 2. Unless otherwise specified:

*a.* Make one application for any number of items controlled by one WPB order.

*b.* Fill out all numbered blocks on the form.

*c.* Sign only the original copy in block 2.

2. *Scheduled deliveries.* When the applicant desires various items to be delivered on various dates, separate quantities should be shown in column (d) of block 8 for each date shown in column (f) of block 8.

*3. *Suppliers.* An authorization is valid for any supplier unless restricted in the authorization or by the applicable order. Orders restricting the transaction to the supplier named in the application are L-182, L-222, and L-248.

Special Cases

4. *Mines and smelters.* If you operate a mine or smelter, see the special instructions under the heading "Mining equipment" before applying for any item of equipment listed in this booklet.

5. *Governmental agencies, schools, hospitals, and institutions.* If application is made by a governmental agency (Federal, state, county or local), school, college, hospital, U. S. O., the Red Cross, or any miscellaneous institution, public or private, as defined in CMP Regulation 5A, the words "Government Division" should be inserted in block 6 following the WPB order number. In block 7, insert the name of the division controlling the equipment as shown in the special instructions.

*6. *Export.* If the equipment is to be exported under an FEA license, send your WPB-1319 to the Foreign Economic Administration, Washington 25, D. C. (See special instructions for Aircraft and aircraft products.) If the export is licensed, fill in block 11B; if not, attach the appropriate license application.

7. *Hawaiian deliveries.* If the equipment applied for is to be delivered to Hawaii, the application should be sent to the War Production Board, Honolulu, Hawaii, even though the special instructions require filing in other offices of the War Production Board.

**Bags, new, cotton**

M-221, Containers Division

Send 3 copies to War Production Board, Washington 25, D. C.

Form WPB-1319 is to be used when applying for authorization to use new cotton bags for uses other than those listed in subsection (q) of Order M-221.

Do not fill in blocks 9, 13, 14, 16 and 17.

In block 6, enter *M-221.*

In block 7, enter *Containers.*

In block 20, state:

(a) the number of cotton bags you used in 1943; and

(b) the number you will require in 1944.

*New wording.

***Construction machinery, new, as listed in Schedule A of Order L-192**

L-192. Construction Machinery Division.

[L-192 published in full in Pit and Quarry, April, 1944, pages 60 to 62, and latest amendment (September 28, 1944) in November, 1944, issue, page 71.—Ed.]

Send 4 copies to the nearest WPB office listed below in your region:

| | |
|---|---|
| Boston, Mass. | Kansas City, Mo. |
| New York, N. Y. | Dallas, Tex. |
| Philadelphia, Pa. | Denver, Colo. |
| Atlanta, Ga. | San Francisco, Calif. |
| Charlotte, N. C. | Los Angeles, Calif. |
| Memphis, Tenn. | Minneapolis, Minn. |
| Cleveland, Ohio | Seattle, Wash. |
| Cincinnati, Ohio | Portland, Oreg. |
| Chicago, Ill. | |

In block 1, if the application is made by the seller on behalf of the purchaser, state the name of each. For example, "John Doe Company on behalf of Richard Roe."

In block 6, enter *L-192.*

In block 7, enter *Construction Machinery.*

In block 20, state:

(a) duration and preference rating of project on which equipment is to be used *and if it is to be used on Federal Government project give contract number;*

(b) other known projects on which equipment will be used:

(c) any other applications pending or contemplated for similar or substitute equipment;

(d) preference rating applicable to the purchase order if any issued and number of rating certificate;

(e) if application is filed by a governmental agency (other than a war agency as defined in L-192), whether the agency is required by law or regulation to obtain competitive bids. If bidding is required, state whether a purchase award has been made for the specific equipment applied for on this application.

Note.—The War Production Board will not approve an application where an award is required unless it is stated that a purchase award hs been made for the specific equipment applied for.

Make a separate application for each supplier.

If you are requesting authorization to purchase a track-laying tractor under Order L-53 and wish to purchase simultaneously such new allied tractor equipment listed in Schedule A of Order L-192 as angledozers, bulldozers, power control units, winches and cranes, list these attachments on your application. It does not matter if the attachments and tractors are made by different manufacturers.

If you as an ultimate user are requesting authorization to purchase a wheel-type tractor for industrial use under Order L-257, Direction 2, and wish to purchase simultaneously such new construction machinery attachments listed in Schedule A of Order L-192 as angledozers, bulldozers, power control units, winches and cranes, list these attachments on your application. It does not matter if the attachments and tractors are made by different manufacturers. In any case, Order L-192 should be entered in block 6 and not Order L-257, Direction 2. If you are requesting a rating for a wheel-type tractor for industrial use without construction machinery attachments, apply on Form WPB-541 and not WPB-1319 to the nearest WPB field office.

***Construction machinery repair parts, new**

L-192. Construction Machinery Division

[L-192 published in full in Pit and Quarry, April, 1944, pages 60 to 62, and latest amendment (September 28, 1944) in November, 1944, issue, page 71.—Ed.]

Send 3 copies to War Production Board, Washington 25, D. C.

*Note:* See Order L-192 for the instances in which this application shall be made.

Do not fill in blocks 9, 17 and 18.

In block 1, if the application is made by the seller on behalf of the purchaser, state the name of each. For example, "John Doe Company on behalf of Richard Roe."

In block 6, enter *L-192.*

In block 7, enter *Construction Machinery.*

In block 8, column (a), list each repair part requested together with the information called for under columns (b), (d), and (f). In column (c) state unit cost for each part and in column (e), total cost.

In block 20, state:

(a) Quantity, make and model numbers of equipment to be repaired;

(b) Duration and preference rating of project on which equipment is to be used;

(c) Estimated annual dollar volume of previous purchases of repair parts for equipment to be repaired;

(d) Present inventory of repair parts requested;

(e) Reasons which will adequately justify the feasibility of repairing such equipment; and also

(f) The anticipated period of time the repaired equipment is expected to continue in useful service.

*New wording.

***Construction machinery, used, as listed in Schedule A of Order L-196**

L-196, Construction Machinery Division.

Send 4 copies to the nearest WPB office listed below in your region (Michigan applicants should send their applications to the Chicago office):

| | |
|---|---|
| Boston, Mass. | Kansas City, Mo. |
| New York, N. Y. | Dallas, Tex. |
| Philadelphia, Pa. | Denver, Colo. |
| Atlanta, Ga. | San Francisco, Calif. |
| Charlotte, N. C. | Los Angeles, Calif. |
| Memphis, Tenn. | Minneapolis, Minn. |
| Cleveland, Ohio | Seattle, Wash. |
| Cincinnati, Ohio | Portland, Oreg. |
| Chicago, Ill. | |

*Note:* This application shall be filed by the buyer or seller of the equipment for authorization to buy or sell. Where distributors are the purchasers no application need be made. Transfers between government agencies require no application. Farmers need not apply for authorization to sell. For other exemptions see paragraph (f) of Order L-196.

Fill in *only* blocks 1, 4, 5, 6, 7, 10, 11, 12.

In block 1, if the application is made by the seller on behalf of the purchaser, state the name of each. For example, "John Doe Company on behalf of Richard Roe."

In block 6, enter *L-196.*

In block 7, enter *Construction Machinery.*

In block 8, fill in columns (a), (b), (c), (d), (f). In column (e), instead of purchase price, state whether machine is sold "as is" or "rebuilt".

In block 20, state substitute model you will accept if machine applied for is not available.

*If for export,* in addition to complying with the instructions above: In block 18, state efforts made to obtain similar equipment in area of project location.

**Laboratory equipment, new, included on List A of Order L-144**

L-144, Safety and Technical Equipment Division.

Send 3 copies to the War Production Board, Washington 25, D. C.

*Note:* Do not apply for items having a cost per unit of less than $50.

In block 6, enter *L-144.*

In block 7, enter *Safety and Technical Equipment.*

In block 11, show address of laboratory where equipment is to be used.

In block 20, state:

(a) Preference rating applicable, and how obtained;

(b) Applicant's serial number (if any) under P-43;

(c) List all identical equipment or other equipment which can do the same work) owned by the applicant;

(d) Number of persons using the equipment and why it cannot continue to be used;

(e) What outside laboratory could do the work for you and why its facilities are not being used; and

(f) If applicant is an educational institution, number of students in the course this year and last year.

***Mining equipment, new, for all mines and for serialized smelters**

P-56, Mining Division.

[This order was published in full in Pit and Quarry, May, 1944, pages 55 and 56, and subsequent amendments appeared in the issues for July, pages 55 and 56 and August, page 41.—Ed.]

All mines should send 5 copies of the application to the Mining Division, War Production Board, Washington 25, D. C., Reference: P-56.

*Exception:* (1) When the equipment applied for is controlled by Order L-192, Schedule A, or L-53, domestic mines should send 6 copies to the nearest WPB field office;

However, when the construction machinery is listed on Schedule B of Order L-192, send the application directly to the Mining Division.

(2) Domestic non-serialized mines applying for minor capital additions costing $500 or less not covered by (1) above should send 5 copies of the application to the WPB field office in which is located the Technical Advisor for Mining of the area in which the application originates.

Mine and smelter operators must apply for priority assistance on form WPB-1319 to obtain the machinery and equipment:

1. Listed in this instruction pamphlet;

2. Not listed in this instruction pamphlet for which preference ratings are required but for which no special authorization forms are required.

For equipment not listed in this pamphlet, for which application on special forms is required by WPB orders, apply on the proper Mining Division, Washington 25, D. C., Ref.: special form and send the application to the P-56.

Mine and smelter operators applying for equipment listed in this pamphlet to be used in mines and smelters, whether the equipment

*New wording.

is or is not controlled by the Mining Division, must follow not only the special instructions listed below but also must follow any special instructions applying to the type of equipment requested. The special instructions below should be followed in applying for equipment not listed in the pamphlet and not requiring a special form.

In block 2, use one of the following terms: Metal Mine, P-56; Coal Mine, P-56; Non-Metallic Mine, P-56; Smelter, P-56.

Insert "P-56" and "Mining Division" in blocks 6 and 7, respectively, on all WPB-1319 applications.

In block 11, state the name of the mine.

In block 12, give a full statement for the operating or engineering department.

In block 20, state:

(a) P-56, serial number, or, if you have no serial number, write "no serial number";

(b) the number of men employed;

(c) the present average daily production;

(d) whether present equipment is being used to maximum capacity;

(e) whether sufficient manpower and auxiliary equipment are available for the efficient use of the equipment requested;

(f) the number and date of purchase order;

(g) the rating requested; and

(h) The promised delivery date on rating requested:

Since the last copy of form WPB-1319 will be sent to the supplier by the War Production Board, page 2 of the last copy should be left blank.

**Scales, balances, and weights, new**

L-190, Service Equipment Division.

Send 3 copies to the nearest WPB field office.

In block 6, enter *L-190.*

In block 7, enter *Service Equipment.*

In block 20, state:

(a) complete description of the scale requested:

(1) capacity and platform size.

(2) type of indicating element (manually-operated weigh-beam, automatic dial or automatic Weightograph, or automatic dial with automatic printer).

(3) if for railroad track scale, give number of sections, sectional capacity and whether to be installed with or without dead rail.

(4) if for motor truck scale give deck construction (concrete, wood, or steel)

(5) number of weighing operations to be performed on the proposed scale during the coming 12 months (include tare weighings, if any).

(b) complete description of the scale to be replaced (covering the same points listed under (a) above)

(c) if the application is for a railroad track scale, state:

(1) gross weight of heaviest *loaded* cars to be weighed (i) percentage of cars in this group

(2) over-all wheelbase of longest cars to be weighed (i) percentage of cars in this group

(3) whether motion weighing in any manner is contemplated

(4) specification of and distance to the nearest railroad track scale and reasons this scale cannot be used

(d) if the application is for a motor truck scale:

(1) length of approach level with the platform which can be provided for a 20-foot platform scale

(2) number of hours a day proposed scale will be available to the public

(3) length and capacity of and distance to the nearest motor truck scale having a platform 34 the length or more of the scale requested

(4) number of loads to be weighed during the coming 12 months (include tare weighings, if any) on the proposed scale in trucks having over-all wheelbases of

| | |
|---|---|
| under 22 feet | 40 and under 45 feet |
| 22 and under 28 feet | 45 and under 50 feet |
| 28 and under 34 feet | 50 and under 55 feet |
| 34 and under 40 feet | 55 feet or more |

(5) Number of loads to be weighed during the coming 12 months on the proposed scale having *gross* weights of

under 25,000 pounds
25,000 and under 37,000 pounds
37,000 and under 49,000 pounds
49,000 and under 61,000 pounds
61,000 and under 81,000 pounds
81,000 pounds or more

***Tractors, track-laying, repair parts**

L-53-b, Construction Machinery Division.

If for domestic use, send 3 copies to the War Production Board, Washington 25, D. C. (See L-53-b, paragraph (c) (1).)

*Instructions for all applicants.*

Do not fill in blocks 9 (a), 13, 14, 16, 18, and 19.

In block 1, if the application is made by the seller on behalf of the purchaser, state the name of each. For example, "John Doe Company on behalf of Richard Roe."

In block 6, enter *L-53-b.*

In block 7, enter *Construction Machinery.*

*If application is for domestic use:*

In column 8 (a), list each part. Fill in columns 8 (b), (d) and (f).

In block 20, state:

(a) the quantity, make, and model numbers of tractors to be serviced;

(b) the duration and preference ratings on the project for which the tractor will be used. If no rating has been assigned, describe the work to be done by the tractor to be serviced and the period of time the tractor will be so occupied;

(c) the estimated annual dollar volume of previous purchases of repair parts for the tractors to be serviced;

(d) the present inventory in units of the repair parts requested in this application;

(e) if for stock or inventory, adequate reasons stock must be retained, including the distance from your usual source of supply.

*If the producer's application is for an export dealer's or distributor's annual quota:*

In block 3, give the total estimated value of parts to be shipped during the period from July 1, 1944 to June 30, 1945.

In column 8 (a), state the number of tractors to be serviced. Do not fill in columns 8 (b), (c), (d), (e), and (f).

In block 20, state the dollar value only of:

(a) 1943 shipments of parts;

(b) the present inventory of parts;

(c) the actual and contemplated shipments of parts during the period January 1, 1944 to June 30, 1944.

*If application is for export to other than an export dealer or distributor:*

In column 8 (a), list each part requested, and fill in columns 8 (b), (d), and (f). (Attach an extra sheet if necessary.)

In block 12, describe the work being done by the tractors to be serviced and the period of time the tractors will be so occupied.

In block 20, state:

(a) the quantity, make, and model or class numbers of the tractors to be serviced;

(b) the estimated annual dollar volume of previous purchases of parts for the tractors to be serviced;

(c) the present inventory in units of the repair parts requested in this application;

(d) the reasons the parts can not be procured through tractor dealers serving your territory.

***Tractors, track-laying, unused**

L-53, Construction Machinery Division.

Send 5 copies to the nearest WPB office in your region *listed below,* except Michigan applicants and farmers. All Michigan applicants are to send their applications direct to the Chicago office. Farmers should send 5 copies to their nearest U. S. Department of Agriculture County War Board.

| | |
|---|---|
| Boston, Mass. | Kansas City, Mo. |
| New York, N. Y. | Dallas, Tex. |
| Philadelphia, Pa. | Denver, Colo. |
| Atlanta, Ga. | San Francisco, Calif. |
| Charlotte, N. C. | Los Angeles, Calif. |
| Memphis, Tenn. | Minneapolis, Minn. |
| Cleveland, Ohio | Seattle, Wash. |
| Cincinnati, Ohio | Portland, Oreg. |
| Chicago, Ill. | |

Since almost all new tractors have been allocated for military use in combat areas, there is not a sufficient supply to fill all essential non-military requirements. It is therefore the policy of the Construction Machinery Division to deny applications for new tractors from applicants who are unwilling either to accept as substitutes suitable used tractors either purchased or leased or to accept subcontracting facilities.

If you are requesting authorization to purchase such new allied tractor equipment listed in Schedule "A" of Order L-192 as angledozers, bulldozers, power control units, winches and cranes and wish to purchase simultaneously a track-laying tractor under Order L-53, list these attachments on your application for the tractor. It does not matter if the attachments are made by different manufacturers.

In block 1, if the application is made by the seller on behalf of the purchaser, state the name of each. For example, "John Doe Company on behalf of Richard Roe."

In block 6, enter *L-53.*

In block 7, enter *Construction Machinery.*

In block 18, in addition to the information requested therein, state what efforts have been made to lease suitable used tractors or to subcontract the work for which the new tractors are requested. If there is not sufficient space for your answer in this block, answer on a separate attachment and so indicate in the block.

In block 20, state:

(a) duration and preference rating of project on which tractors are to be used;

(b) other known projects on which tractors will be used;

(c) any other application pending or contemplated for similar or substitute equipment;

(d) substitute models of comparable horsepower you will accept if tractors applied for are not available;

(e) serial number of tractors applied for if they are in dealer's stock;

(f) preference rating applicable to the purchase order if any has been issued and number of rating certificate;

(g) describe the used crawler tractors or their equivalent (including the specified attachments which you would be willing to accept as substitutes for the tractors covered by this application;

(h) whether you are willing to buy or to lease used crawler tractors and attachments described by you in answer to (g) above if the War Production Board locates them for you and if they pass the inspection of you or your representative;

(i) whether you are willing to discuss and enter into a subcontract with contractors owning suitable equipment if a list of such contractors is furnished you by the War Production Board.

**Trucks, industrial, power, new and used**

L-112, General Industrial Equipment Division.

Send 5 copies for new trucks (6 copies for used trucks) to War Production Board, Washington 25, D. C.

*Note:* If authorization for either used or new equipment is received and not used within the valid period, return one copy to Washington within 10 days, with explanation. In the case of *used* equipment, if purchase is made return one copy marked "Purchased." Make a separate application for each supplier.

In block 6, enter *L-112.*

In block 7, enter *General Industrial Equipment.*

If application is for a used truck, do not fill in block 8, column (e).

In block 20, state:

(a) Size and character of load;

(b) Tonnage a day to be handled by each unit applied for;

(c) Tiering problem, if any;

(d) Claimant agency and numbers of Federal prime contracts in connection with which this equipment is required;

(e) If the truck is not an approved standard model, or has special specifications, the reason an approved standard model cannot be used.

***Wheel-type tractors, new, for industrial use with new construction machinery attachments listed in Schedule A of L-192**

L-257, Direction 2, Farm Machinery Division

In block 6, enter *L-192.*

In block 7, enter *Construction Machinery.*

See: Special Instructions for "Construction machinery, new, as listed in Schedule A of Order L-192."

*New wording.

*New wording.

## Concrete Ships Sunk to Form Invasion Ports

The American Merchant Marine Institute has characterized as "one of the most unique" in the history of warfare the operation in which an estimated 200,000 tons of United States shipping was sunk off the Normandy beachhead to form breakwaters for two new ports.

Two concrete ships, the David O. Saylor and the Vitruvius, built in 1943 at Tampa, Fla., were "found ideal for the assignment." The construction of these ships was recently described in PIT AND QUARRY.

M. H. Billings, of Minneapolis, Minnesota, director of the Mica-Graphite Division of the War Production Board, has resigned to return to private industry. He will be associated with the Union Carbide & Carbon Company, a division of the National Carbon Company, at Niagara Falls.

Kansas reached a new high in mineral production in 1943 and ranked fifth in the United States in output of crude oil and natural gas, it was announced in an annual summary issued today by the Bureau of Mines.

# Developments in the Manufacture of Better Refractories for the Portland Cement Industry

By

**LEOPOLD TSCHIRKY**

GENERAL REFRACTORIES COMPANY

WHILE refractories have have played an important part in the manufacture of cement, very little attention was focused on them in the vertical kilns used for the burning of "natural cement" because such kilns were not called upon to reach temperatures much in excess of that required to drive off the carbon dioxide in the "natural stone," as that begins to take place at about 1,400 degrees F. and is probably completed when a temperature of about 2,000 degrees F. is reached. This, therefore, presented very little of a refractories problem and almost any good fireclay brick with reasonable physical strength was altogether satisfactory for the kiln lining.

Later when Portland cement came prominently into the picture, refractories began to take on more importance to the cement manufacturer, because it was found that making this grade of cement required a somewhat higher burning temperature than was needed to burn "natural cement," for not only must the carbon dioxide be driven off, but the non-volatile parts had to be raised to a sufficiently high temperature so that they became pasty, to make it possible for the constituents to rearrange themselves into new compounds that would harden when ground and mixed with water and immersed in it. This required a temperature high enough that the firebrick linings then used would sometimes show signs of "slagging away." This "slagging away," however, did not become really serious until the rotary kiln was introduced and became the more-or-less standard type of kiln for the burning of Portland cement clinker early in the present century.

*Early Troubles.*—But even in the early days of the rotary kiln, while refractories used in their lining would occasionally "slag away" rapidly, the results were sufficiently satisfactory on the average that, even though refractories became a subject of still greater importance to the cement manufacturer, the investigation of the causes of variable results did not go much beyond finding out what refractories others in the industry were using and with what results. If others were using a product manufactured by some other refractory manufacturer than that used by the inquirer, and his results were somewhat better, the "investigation" resulted in a change of source of supply with the hope the other's results would be matched. If the change resulted in better life, all was well until such time as lining life again became short, when a similar investigation was again undertaken. Such investigations, however, contributed little or nothing in the way of actual knowledge, but they temporarily served the immediate purpose, for up to this time burning temperatures actually rarely exceeded 2,400 degrees F. The latter is said with no intention of casting any reflections on the cement operators of the early days, because the condition that existed to that time was as much due to the refractories industry as to any other cause. This is true because up to that time the refractories industry was lacking in research and a knowledge of why certain things happened in service. In those days a brick that was considered good in the past was expected to be good in the future, and seldom did a refractory manufacturer know his product was lacking or deteriorating in quality until the complaints from his trade were so many that he finally felt it was necessary to check his raw materials to determine if he should open a new clay mine or pit.

But all this changed, and very rapidly so, when in the early 1920's the cement industry began to give attention to the quick-hardening cements which then were gaining favor. The early experiences in manufacturing cements of this type resulted in burning-zone linings requiring replacement far more frequently than formerly, and short life was so common that the refractory manufacturer began to hear much about "harder-burning mixes," "higher burning temperatures," "high lime content," "low silica ratio," "free lime," etc. But then the stage was set for the refractory manufacturer to do something about this. The first World War and the refractory problems encountered in new furnace design to step up production in all heavy industry—and at the lowest possible production costs—had forced the refractories industry into really worth-while research, as we know research today. Simultaneously with the more severe refractories requirements came the development of high-alumina refractories of diaspore-clay base. This development was a big forward step and, together with research, caused us all to come to the realization that things did not just happen to refractories in a rotary kiln, but that there were very definite reasons why they happened. Furthermore, the refractories industry had by then learned much about its own raw materials and how best to blend and use them to produce certain desired characteristics in their finished product.

So, actually, refractories in Portland-cement manufacture first became a really important subject as late as from 1920 to 1924, and most of the worth-while forward developments have occurred since that time.

*Raw Materials.*—The improvements and changes in the properties of the finished refractories now being furnished to the Portland-cement industry are not, generally speaking, the result of novelties in raw-material supplies. The fire clays from Pennsylvania, Kentucky, Ohio, Missouri and Texas remain the chief sources of supply of material for fire-clay brick. The diaspore clays from Missouri and kaolin from Georgia continue as the chief sources of supply for the high-alumina and special refractories made from these

*Presented before the Technical Committee, Portland Cement Association, September 19, 1944.

materials. The Washington magnesite, supplemented by the excellent magnesites made from sea water, remains the chief source of supply of basic material. The chrome ores from Cuba are essentially the same type that have been imported for years.

Therefore, the improved refractories of to-day are not the result of new raw materials but rather the result of a better understanding of their properties and the reduction to practice of methods of developing and controlling them.

The entry of the physical chemist and technical engineer into the refractories field has played a prominent part in product improvement and has also accelerated the pace with which these improvements have proceeded. Their work has resulted in better physico-chemical conceptions of the fundamental properties of refractory materials as well as the application of many advanced engineering principles in the actual manufacturing processes.

A better understanding of the possibilities in refractories of the aluminum-silicate type, which includes most of those heretofore supplied the Portland-cement industry, has been gained from the use of such phase-rule diagrams as those of the system $Al_2O_3$—$SiO_2$ (Figure 1) and CaO—$Al_2O_3$—$SiO_2$ (Figure 2). Likewise the possibilities in basic refractories, which have gained wide favor for burning-zone problems too severe for refractories in the aluminum-silicate classification, are gained from the use of phase-rule diagrams for combinations including magnesia (MgO), as the one for the system CaO—MgO—$SiO_2$ (Figure 3).

Our great deposits of fire clays, from which bricks with their many purposes must continue to be made for economic reasons for many years to come, present a never-ending

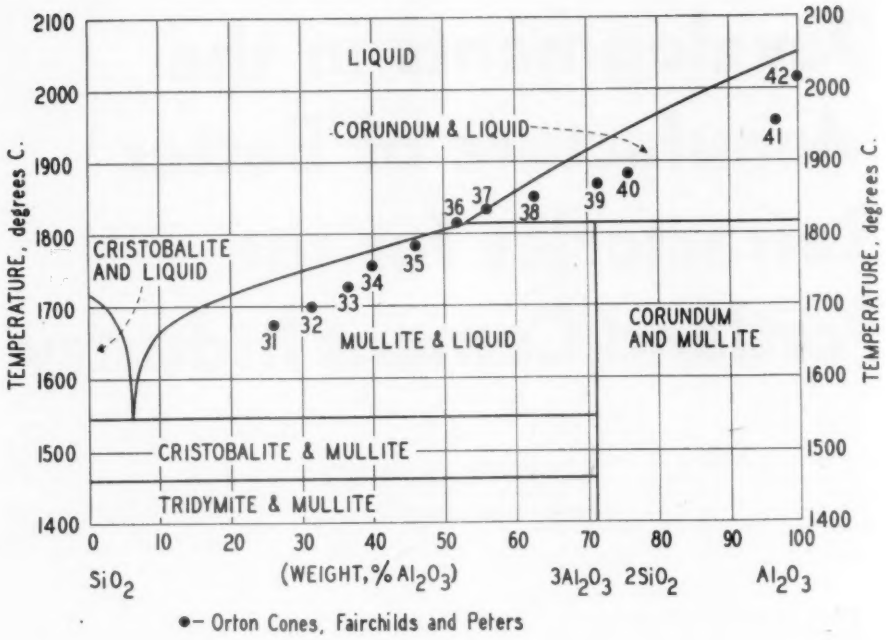



Figure 1

problem of control. The question of making suitable bricks from these clays, in the light of the phase-rule diagram referred to, is the problem of converting an almost amorphous raw material into a stable mass of maximum crystallinity. With an understanding of these phenomena we have learned that, if we painstakingly submit our raw clays to a series of time-temperature tests, we can anticipate rather exactly the volume stability of the brick we can make from the clays as well as the subsequent stability of the bricks in service.

The prior development of the knowledge of properties dependent mostly on composition has been followed by close scrutiny of the mechanics of certain physical properties, which result largely from processing and are factors in the subsequent life of refractories.

If we except slagging, the most common type of failure of refactories in the cement industry is spalling. Fortunately a much better understanding has been gained of the forces causing this type of failure and the manner in which these forces may be controlled within limits.

*Spalling.*—For many years we proceeded on a theory unsupported by careful physical studies that all spalling was due to pure thermal shock resulting from rapid and wide temperature fluctuations. Later it was realized that spalling was a much more complex phenomenon and was related not only to thermal shock, but also to structural or textural changes in the brick. Further studies emphasized the importance of certain definite measurable properties of refractories related to spalling. These properties in turn are affected by practically all the various unit operations involved in manufacturing a refractory. The extent to which grain size, mix, molding pressure, and burn affect spalling in the light of the above has engaged the attention of the refractories manufacturers. This has

Figure 2

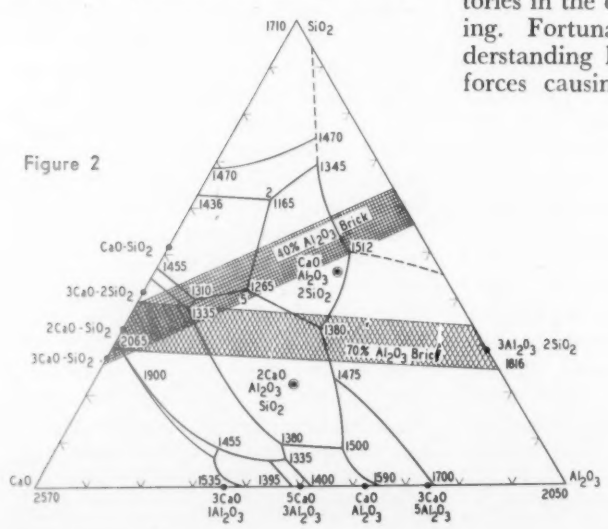
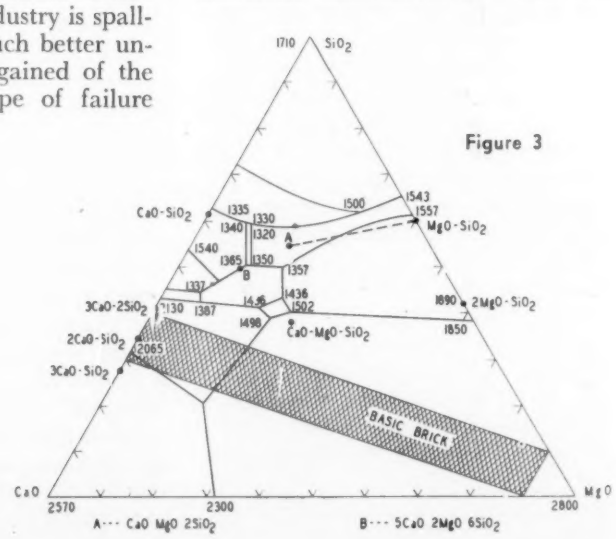



Figure 3



necessitated much careful plant experimentation pointing the way not only to the production of more spall-resistant brick but to improvement in all the properties bricks should possess to give maximum life in service.

To keep in step with the increased demands for improvement in the properties or refractory products, as has been pointed out, resort has not been made to the use of new types of raw materials—although we are ever on the lookout for them—but to better methods of manufacture.

*Steps in Manufacture.*—In general the conventional manufacture of refractories has always been effected in five unit operations:

1. Grinding and screening
2. Mixing
3. Pressing or molding
4. Drying
5. Burning

The recognition of high bulk density, in any given group of refractory materials, as the most important single property which may be controlled in manufacture, and which affects the greatest number of other important properties in service such as strength, volume stability, spalling resistance and conductivity, has resulted in the application of most of the more recent and novel principles in manufacturing.

*Grinding.*—The first point of approach to increased density obviously is the size of the grains constituting the batch. A number of refractories are now available in which high density is achieved by carefully screening out the grains falling within certain size bands, and recombining them in definite proportions. The application of this principle is, of course, modified by a number of factors. It may be used most successfully on hard and highly-crystalline materials which do not compact readily under pressure and, conversely, is of least value in brick mixes of inherently high plasticity.

*Mixing.*—The true function of the mixing operation is now recognized to be the distribution of the plastic or bonding materials, so as to coat thoroughly the non-plastic constituents; in other words, to provide a lubricant during the subsequent molding operation to create free plastic flow of the batch particles and permit them to be bonded into a mass with the minimum amount of voids. Improvements in mixing have been made which make possible a more effective coating of plastic material on the non-plastic grains, a reduction in the percentage of plastic material required to secure a good bond, and, not least important of all, the ability to do this without crushing of the established grain sizes during the mixing operation.

*Molding.*—One obvious method of increasing density, attended by many practical difficulties, has been to increase the molding pressure. This did not follow until one refractories manufacturer had the courage to install a specially-constructed high-speed hydraulic press for regular brick production, capable of pressing at 10,000 pounds per square inch. This press stepped up the pressure five to ten times over that attained on the usual mechanical brick press. The press is shown in Figure 4, and it may be of interest to mention here that it was then, and still is, the largest brick press in the world.

With the introduction of high-pressure, high-speed molding it was found that compression of the air entrapped in the voids of the bricks being molded and subsequent expansion upon sudden release of the pressure frequently resulted in pressure cracks or laminations. Overcoming this difficulty and taking full advantage of the high density possible with extremely-high pressure, resulted in another important forward development in refractories, namely, "de-airing" during the pressing operation. This "de-airing" is now accomplished in a very ingenious manner by the use of a vacuum, the manner of applying the vacuum differing somewhat dependent on whether "stiff-mud" or "dry-press" bricks are being molded.

*Drying.*—The purpose of this operation is to remove excess moisture content. As some refractory mixes contain as much as 15 per cent. moisture, it is necessary carefully to control the drying operation to provide a uniform rate of moisture removal from all the surfaces of the molded brick. Unless this is done, drying shrinkage is very apt to be accompanied by distortion, warping and cracking. The benefits of controlled uniform drying are well known and have resulted in numerous improvements in drying equipment.

*Burning.*—Burning, or firing, has two important functions. One is to develop a permanent bond in the molded brick by partial vitrification of the mix, and the other is to develop temperature-stable mineral forms of the major component of the mix.

Rather than delay the development of the temperature-stable form of the minerals in most refractory materials until the final firing stage, it is now recognized that it is frequently better to start off with material as nearly pre-stabilized as possible and reserve as the chief function of the firing treatment the maturing of the bond. There are thus eliminated the strains—shrinkage or expansion strains as the case may be—accompanying the various mineral changes involved, and the original advantage of tight interfitting of sized grains, to set up high density, is maintained.

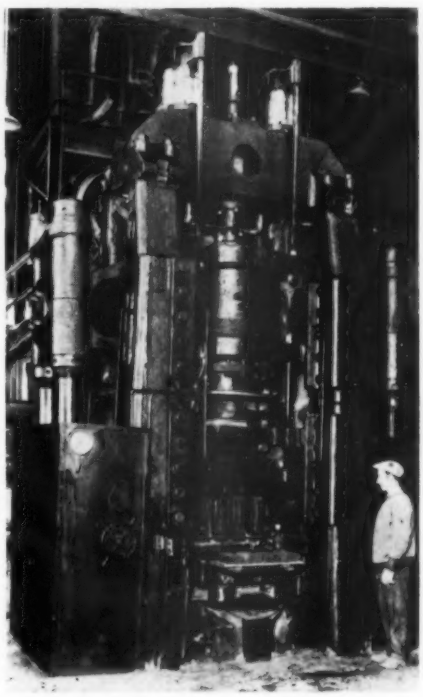


Figure 4. High-speed hydraulic press used in making refractory bricks.

This trend to pre-stabilization is well advanced. Calcined clays have always been part of the mix in making many fire-clay refractories, but the temperature of calcining has frequently been lower than the temperature of firing the brick. Many of the kaolin and diaspore clay refactories intended for high heat and super-duty service now contain clays whose pre-calcining temperatures have been stepped up—some to as high as over 3,000 degrees F.

The burned magnesite used in making magnesite refactories has always been calcined to temperatures of about 2,850 degrees F. of necessity to rid the original mineral to $CO_2$ and to crystallize the MgO to

(*Continued on page* 61)

General plant view, at Rosiclare, Illinois, of the world's oldest producer of fluorspar.

# Rosiclare Company is World's Oldest and Largest Producer of Fluorspar

another ON THE SPOT report

THE Rosiclare Lead & Fluorspar Mining Company at Rosiclare, Illinois, is the oldest and largest consistent producer of fluorspar in the world. For almost a century mining operations have been conducted on the company's properties. The earliest operations along the Rosiclare vein were for galena, but small quantities of fluorspar were produced as early as 1870 and since then the production of fluorspar has roughly paralleled the steady growth of the metallurgical and ceramics industries.

During the spring of this year the company started operating a new American Cyanamid heavy-media separation plant for the production of metallurgical and ceramic grades of fluorspar.

The Rosiclare mine of this company has been developed on the most important of the four mineralized faults from which fluorspar is produced in the district, and mining operations have covered a length of more than three miles. The main, or plant, shaft of this mine, from which ore is hoisted directly to the mill bin, has a depth of 720 feet. A subsidiary shaft known as the Rosiclare Shaft, is located 535 feet south of the main shaft and is used

**By WILLIAM M. AVERY**

for men and supplies. The main haulage and drainage level is located 620 feet below the surface, and extends 2,300 feet north and 1,200 feet south of the main shaft. Shrinkage stoping is employed principally, all the ore mined above the 620-foot level being passed down through

On the left is a ball mill, and at right a classifier used in the acid spar plant.

stope chutes and rises to the haulage level.

The skip buckets from the mine shaft dump directly over an 8-inch grizzly through which any oversize material is sledged. From the bins below the grizzly the ore passes over a single-deck hickory-slat vibrating screen fitted with 1½-inch mesh cloth and is washed by high-pressure water sprays. The oversize from the screen passes over a picking apron-conveyor where acid lump spar and high lead-zinc spar are removed by hand and placed in small bins flanking the conveyor. The acid grade material is ground and shipped without further processing. The remainder of the oversize drops into a Telsmith 6-inch gyratory crusher and then passes through a Sturtevant roll-crusher set at 1-inch before rejoining the "throughs" from the screening operation. The combined materials drop into a drag in which the fines are floated out into a settling basin for later removal with a clamshell bucket.

At this point additional material is introduced from a similar operation performed on the muddy, slimy ore obtained from a number of shallow mines operated by the company. This ore, which contains a high percentage of fines, is brought into the plant by trucks and dumped into a surface bin. A crane transfers it to a mill-feed bin from which it flows through a trommel, is washed, picked over and crushed in operations identical with those performed on the

ore from the Rosiclare mine. The fines are deslimed in home-made drags and stocked for future processing.

The ore flows from the two mills are brought together at a bucket-elevator which discharges the materials on an Allis-Chalmers double-deck washing screen. The oversize material goes to a fine-ore bin and thence by belt-conveyor to a heavy-media separation cone.

The separation in the heavy-media plant is accomplished by a Wemco 14-foot cone, having an air lift in the central column and two slow-moving rakes. The medium used is ferrosilicon, containing about 15 per cent. silicon, in which particles of $CaCo_3$ and $SiO_2$ contained in the ore will float readily while the heavier fluorspar sinks. A belt-conveyor feeds ore to the cone from above. Fortunately the ore is usually quite uniform, but the specific gravity of the medium is checked every half-hour and corrected when necessary. The fluorspar settles out in the bottom of the cone, from which it is picked up by the air lift in the central column and discharged into a launder leading to one side of an Allis-Chalmers divided-deck drainage screen. The float product overflows a weir in the side of the cone and is discharged on the other side of the divided screen.

Moving in parallel streams, the two products (fluorspar and waste material) pass over a divided double-deck screen where they are spray-washed free of adhering ferro silicon. The plus-4-mesh fluorspar from the top deck drops on a belt-conveyor and is discharged into a steel bin. It passes through a Hardinge Feedometer to a 12-inch by 25-foot Jeffrey belt-conveyor. A bucket-elevator at the end of the conveyor loads the metallurgical-grade spar directly into freight cars for shipment.

The minus-4-plus-10-mesh spar from the lower deck of the screen is treated on scalper jigs to remove a small amount of contained lead before it is transferred to stock piles.

The ferrosilicon cleaning and recovery circuit starts with the drainage screen located adjacent to the cone separator. A 4-inch Wemco sand pump located below the drainage screen returns the ferrosilicon recovered at this point directly to the cone separator, while the medium that adheres to the conc products is washed off by water sprays at the second screen and pumped to a Dorr thickener tank. Before it enters the thickener tank the ferrosilicon is magnetized by a field of permanent magnets through which the inlet pipe passes. The underflow from the tank is pumped to a primary Dings magnetic separator, where most of the ferrosilicon is recovered, while the overflow from the thickener is pumped back to the washing screen and is used as spray water. A secondary Dings magnetic separator receives the tailings from the primary and effects the recovery of the remaining ferrosilicon. Since the tailing from the secondary separator contains a small amount of fluorspar, it is used as part of the feed to the flotation plant.

• Skip from mine dumping on grizzly at top of the crushing plant.

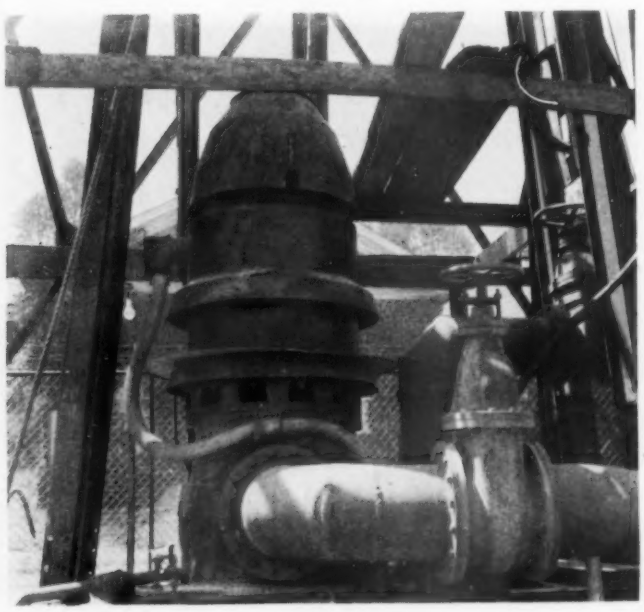
The concentrates from both separators are combined and fed by gravity to a 30-inch by 18-foot Wemco densifier which can be regulated both as to speed and rate of discharge to control the specific gravity of the medium. The discharge from the densifier passes through a demagnetizing coil and drops into a horizontal screw-conveyor which takes it to the medium drainage hopper, where it re-enters the pumping circuit to the cone.

Any ferrosilicon lost in the circuit is hosed into a concrete sump extending over the entire area beneath the plant. A bucket-elevator lifts it from the low point of the sump and discharges it on the ferrosilicon washing screen above. When additions of new ferrosilicon are necessary, they are made at the sump.

The minus-10-mesh material resulting from the screening of the crude ore prior to treatment in the heavy-media separation plant is processed in a flotation plant adjacent to the heavy-media separation plant. The ore is fed from a 100-ton elevated bin to a 12-inch by 18-foot

• 3,200-gallon deep well pump at one of the small mine shafts. When purchased it was the largest of its kind in the world.

• A 6-inch gyratory crusher fed by an apron conveyor which is used as a picking table.



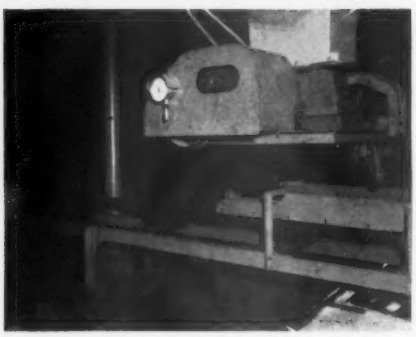
• Pump used for feeding flotation cells in the acid spar plant. Below—Divided double deck screen, with spar coming off at the right, waste material at the left.

• A 14-foot cone separator in the heavy media plant.

• A 30-inch by 18-foot densifier for recovery of ferrosilicon.

Left—Thickener tanks for recovery of ferrosilicon.

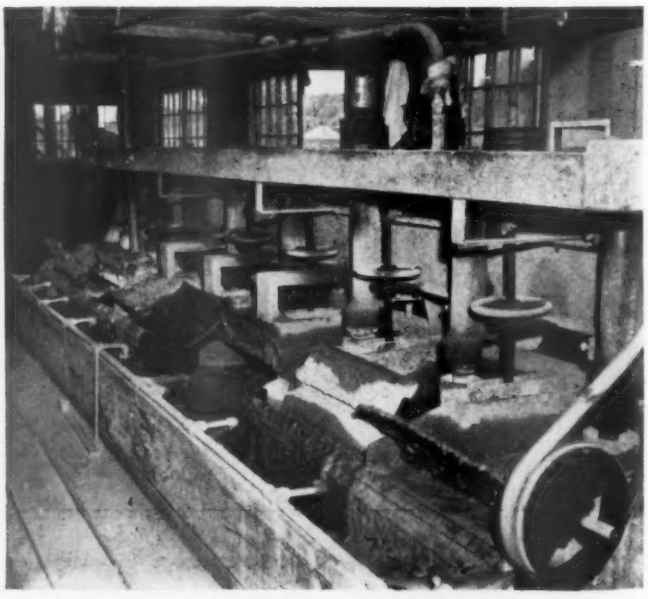
• Below—Magnetic separator used for recovery of ferrosilicon.



• Feedmeter weighing spar onto a 12-inch by 25-foot belt conveyor for shipment. A vibrator is shown on side of bin.

Below right—Sub A flotation machine in the acid spar plant.

• A 4-inch sand pump used for returning ferro silicon to the con separator.



belt-conveyor which discharges it on a 1-inch scalping screen, where foreign particles are removed. From a 3-ton feed bin the material enters the grinding circuit by means of a Hardinge constant-weight feeder.

The grinding is done in a Denver 3- by 4-foot ball-mill operated in closed circuit with an Akins 24-inch spiral classifier. The grinder, classifier and flotation circuits are supplied with warm water which has passed through a Permutit zeolite softener. The classifier sand is cir-

• Evaporator used in finishing acid grade spar. A 3-horsepower motor drives small compressor. Diaphragm pump is on the right.

culated back through the ball mill, and the classifier overflow, containing 30 to 35 per cent. solids, is pumped to the head of the flotation circuit where a bulk sulphide float is taken off in four cells. The bulk sulphide tailings pass through a thickener tank and the underflow is pumped to a conditioner which discharges into a string of six No. 18 Denver Sub-A flotation cells. Four of the cells are used as "roughers" and the concentrates are cleaned and recleaned in the remaining two cells.

The final concentrate flows through a launder to the dewatering building, where it is discharged into a 16- by 8-foot Door thickener. A 2-inch Denver adjustable-stroke diaphragm pump feeds the thickened concentrate to a 2- by 2-foot Whiting Corporation Swenson rotary filter. The filter cake is dried by a 3- by 15-foot oil-fired rotary kiln and is ready for grinding and shipment as acid-grade fluorspar, containing over 98 per cent. calcium fluoride and less than 1 per cent. silica.

The Rosiclare mine, which is the main source of ore at present, has an interesting history. Until 1923 the mine made about 1,000 gallons of water per minute, which was well within the capacity of the pumps then available. During the fall of that year an increased flow was encountered at the 620-foot level north of the shaft, and by January, 1924, this, in combination with unusually heavy rains and a high stage of the Ohio River, produced a flow of 3,500 gallons per minute. Since the pumps and bailers were inadequate for the task of handling this heavy flow, it was decided to abandon the mine temporarily, and to maintain production by more intensive development of the Daisy-Blue Diggings mine located about a half-mile north of the main plant.

The Rosiclare mine remained flooded for 16 years, with the water level varying for 40 to 70 feet below the ground surface. Following the completion in 1939 of a new power plant, consisting of two 600-horsepower B & W boilers, one Allis-Chalmers 1,250-kilowatt and one Westinghouse 1,000-kilowatt condensing turbine units, the mine was used for a time as a source of condensing water. The availability of adequate power led to the decision in 1940 to dewater the Rosiclare mine, and a 3,200-g.p.m., 640-foot Pomona pump was purchased to carry out the program. At the time of its construction this deep-well turbine-type pump was said to be the largest in volume and length ever built.

The new pumping unit was placed in operation in June, 1940, and in 20 days the water in the mine had been lowered from the 200-foot level (where it had been maintained by a smaller pump which supplied the condensers) to the 600-foot level. By October the water had dropped 10 feet below the 620-foot level, and work was started on retimbering both the Rosiclare shaft and the main shaft and cleaning up the 620-foot level, where considerable mud was encountered.

The Pomona pump is now located in the Rosiclare shaft, 535 feet south of the main shaft, and it discharges through an 18-inch pipeline to the turbine basement where the mine water is used for condensing. Recently an 1800-g.p.m. Byron - Jackson submersible pump was installed at the Rosiclare shaft, pumping from a depth of 620 feet. A 500-kilowatt turbine generator was added to the power plant in 1943.

J. M. Blayney is president of the Rosiclare Company with offices in St. Louis, Missouri.

**Refractories** *(from page 57)*

periclase. It is this pre-calcined or burned magnesite that is the base of the so-called "unburned - magnesite bricks" that have come into wide usage in the cement industry during the last 12 to 14 years for extremely-difficult burning-zone lining service, and which hold out great promise of some day—possibly soon—making possible a very much sought-after and far-reaching forward development in cement-kiln linings, namely, satisfactory and effective insulation throughout the kiln burning zone. These "unburned-magnesite bricks" are misnamed. They acquired their name through the fact that, unlike "burned-magnesite bricks," they do not require firing after pressing and drying. Having well-burned magnesite as their base they would be more properly named "chemically-bonded magnesite bricks."

The foregoing briefly covers what has been, and still is, going on within the refractories industry in a constant effort further to develop and improve refractories better to serve the Portland-cement industry. An objective that both the refractories producers and Portland-cement manufacturers can now well afford to pursue together is an intensive study of the conditions which shorten the life of refractories in actual service. Such studies would serve as a basis for making a breakdown of these complex factors so that the refractories manufacturers could apply their ability to produce refractories of specific function. It is not unlikely that such studies would also disclose ways and means whereby some consumers could, even now, improve the results they are getting with the refractories presently available.

Inasmuch as further development of refractories of specific function lies chiefly in the future, whereas improving results with the refractories presently available offers immediate possibilities, we should explore the latter subject further.

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The Guy F. Atkinson Company is preparing to open a quarry in Palos Verdes Hills to supply rock for the improvement of the harbor at San Pedro, California, for which it has the contract.

The quarry will be located on a 30-acre tract which has just been leased for a period of three years by the Atkinson company. Trucks will transport the rock to San Pedro.

# Expert Discusses Problems of Off-Road Haulage Units In Pits and Quarries

**Part Three**

**As in the two previous articles on the subject, the writer backs up his views with factual data that are of practical value in solving haulage problems.**

**By H. K. CHURCH, C. E.**
District Representative
Euclid Road Machinery Co.

another P and Q exclusive

IN TWO previous articles we treated of the characteristics and of typical operations of type "A" 2-axle load-on-back trucks. In this article we will deal with type "B" load - on - back 3-axle tandem-drive trucks such as are being used in open pits and mines. Figure 10 shows a truck of this type. These trucks generally carry from 20 to 40 tons with an average load of perhaps 30 tons. The general specifications of such a truck follow:

| | | |
|---|---|---|
| Tare weight | 45,000 | pounds |
| Load capacity, rated | 60,000 | pounds |
| Gross vehicle weight | 105,000 | pounds |
| Range of engine horsepower | 150 to 225 | |
| Average engine horsepower | 175 | |
| Tires, steering singles | 12.00 x 24 | |
| driving, tandem duals | 14.00 x 24 | |
| Loaded weight distribution, front axle, 12% | 12,600 | pounds |
| each driving axle, 44% | 46,200 | pounds |
| Approximate cost | $18,000 | |

These machines are generally purchased for well-defined specific jobs in keeping with their particular characteristics. Let us evaluate the type "B" truck with respect to the aforementioned nine characteristics, using the type "A" truck as a basis for comparison.

*1. Simplicity.*—The tandem-drive truck is not as simple as the 2-axle unit. From the cab forward the two trucks are pretty much the same, although the harder steering of the tandem drive unit may necessitate power steering which would involve added mechanism with attendant maintenance. From the cab backward type "B" truck is almost twice as complicated as the single-axle-drive type "A" unit. There are generally two hoists instead of one and there are two axles instead of one with added drive lines, universals, differentials, and the like. There is a system of torque arms and sway bars for the purpose of keeping the two axles and two sets of springs in alignment. All in all we can give the simplicity of the truck a rating of 0.75 as compared with the rating of 1.00 for type "A".

2. *Adaptability.* — If the tandem-drive truck is to be used solely in stone hauling or on work where there is ample space for maneuvering, there is no reason to place emphasis on adaptability. However, if the truck is purchased for combination overburden removal and stone haulage then adaptability and maneuverability are more important. In this respect the tandem-drive truck rates 0.75 as compared to the 1.00 factor of type "A" 2-axle truck.

With respect to optional body designs neither truck has an advantage over the other. Both can be equipped with rear- or side-dump bodies with various tail-gate designs. The tandem-drive truck is less maneuverable because of the mechanics of steering, as the four driving wheels are parallel and make up a rectangular pattern of ground contact, which resists any attempt of the front wheels to deflect it from a straight line. When the front steering wheels are turned and the truck is forced around a curve, both front wheels and driving wheels skid or scuff and the result is excessive tire wear. Undue tire wear is particularly noticeable if the operation is cramped, as by close quarters at the shovel and the dump and short-radius turns in the haul road.

One excellent feature of the tandem-drive truck is its adaptability to soft haul-road conditions and this faculty is especially noticeable when the steering axle is equipped with a drive. This all-wheel-drive truck, known as the "6 by 6", is making a marvelous record in present-day military service. However, in open pit and quarry service haul roads are generally excellent for the reason that fine haul roads result in low unit costs for hauling. Therefore, the necessity for a tandem-drive truck, with or without steering-axle drive, is the exception rather than the rule.

Fig. 10. Referred to in the article is the truck shown here—a type "B" load-on-back 3-axle tandem drive.

*3. Ease of Operation.* — On long hauls which do not involve much maneuvering the tandem-drive truck is almost as easy of operation as the 2-axle truck. However, on the average pit and quarry haul there is generally considerable maneuvering at both the shovel and at the dumping point, especially in overburden removal, and this obliges the driver of a tandem-drive truck to increase very much his manual operations in each hauling cycle. For example, the long-radius turning of the tandem-drive truck requires more reversals to get into loading and dumping positions. Because of these limitations it is probably fair to rate type "B" truck with a factor of 0.75 when compared to the 1.00 factor of the single-axle-drive type "A".

*4. Rideability.*—The rideability of the tandem-drive truck is good and it compares favorably with that of type "A". A tandem-drive truck tends to roll each set of wheels over an obstruction without as much raising of the frame level as in the case of the single-axle-drive truck. This rolling action, coupled with lower travel speed because of a lower ratio of engine horsepower to gross vehicle weight, results in very good riding qualities. A rating of 1.00 is assigned to type "B" as compared with 0.75 for type "A".

*5. Ratio of Engine Horsepower to Gross Vehicle Weight.*—The type "B" tandem-driven truck rates fair when compared to type "A." The factor is 3.33 as against 5.83 for the single-axle drive truck. Naturally a truck with a gross vehicle weight of 105,000 pounds should have a larger engine than one with a weight of 60,000 pounds. However, since reliable Diesel and gasoline engines for automotive service are between 150 and 225 horsepower, it has worked out that engines of about 175 average horsepower have been installed almost regardless of gross vehicle weights.

Trucks are built in accordance with the development programs of many suppliers, such as engine, transmission, drive-line, rear-end, and tire manufacturers, and all these programs must be correlated. During the past few years it has been possible to build trucks of structural load-carrying capacities out of proportion to available engine horsepowers.

*6. Ratio of Slipping Point Tractive Force to Gross Vehicle Weight.* —In the tandem-drive truck about 88 per cent. of the gross vehicle weight is on the two driving axles.

• Fig. 11. General view of loading, hauling and dumping facilities. Haul load is 4,500 feet long, average upgrade is two per cent., cycle time about 15 minutes.

With a coefficient of friction of 0.33 the possible tractive force is 29 per cent. of the G.V.W. This factor is better than the 0.25 of the single-axle-drive truck of type "A" wherein 75 per cent. of the G.V.W. is on the driving axle.

*7. Ratio of Cost to Capacity.*—The cost of a 30-ton tandem-drive truck is about $18,000, giving a ratio of about $600 for each ton of capacity. This is a fair ratio and is about 75 per cent. of that of the 2-axle type "A" truck, the factor of which is $800 per ton.

*8. Ratio of Tare Weight to Load Capacity.*—The truck weighs about 45,000 pounds and with a rated load capacity of 60,000 pounds the tare weight-load capacity ratio is 0.75. While it is good to reduce this ratio as much as possible if the truck is designed for highway-transport service, it is generally not wise to keep the ratio too low when the truck is intended for heavy duty "off-the-road" service. The factor of 0.75 for the tandem-drive truck is fair when compared with the factor of 1.00 for the type "A" unit.

*9. Work Factor—Ratio of Total Work Done to Pay Work Accomplished.*—In the first article in this series it was developed that the work factor of a truck is represented by the quotient of two times the tare weight plus the load divided by the load, which factor represents the total amount of work done by the truck in order to accomplish a given amount of pay work. For the type "B" tandem-drive truck the factor is represented by the fraction

• Fig. 12. Loading under a 4½-cubic yard shovel. Five buckets make a load averaging 40 tons and impacts are heavy. Loading time is about two minutes.

$$\frac{2 \times 45{,}000 + 60{,}000}{60{,}000}$$ and is equal to 2.50. This is a good factor and it compares advantageously with 3.00 for the type "A" truck. If one keeps in mind that the cost of doing work is more or less proportional to the amount of work done, one will appreciate that it is advisable to keep this work factor as low as possible.

*Over-all Evaluation Factor.* — It will be recalled that an over-all evaluation factor of 46 was developed for the type "A" 2-axle load-on-back truck. It was emphasized that all nine factors, some capable of absolute determination and some incapable of anything except arbitrary estimate, were given equal weights in arriving at the over-all factor.

The corresponding factor for the type "B" tandem-drive load-on-back truck is represented by:

$$\frac{0.75 \times 0.75 \times 0.75 \times 1.00 \times 3.33 \times 0.29 \times 0.75}{600 \times 2.50} = 20$$

This factor of 20, as compared with 46 for the type "A" truck, indicates that the tandem-drive unit is not as satisfactory as the type "A" unit for all purposes. This is substantiated by the greater popularity of type "A." The tandem-drive truck is essentially a special-service truck and it is purchased when the buyer desires certain characteristics to the reasonable exclusion of others.

**Overburden Haulage** At Ajo, Arizona, in the open-pit cut of the New Cornelia Mine of the Phelps Dodge Corporation is one of the most interesting operations involving the use of large-capacity type "B" trucks. For about seven years four 40-ton capacity trucks have been used in hauling overburden.

General Specifications of Truck

| | |
|---|---|
| Rated load capacity | 80,000 pounds |
| Tare weight | 40,500 pounds |
| Gross vehicle weight | 120,500 pounds |
| Diesel-engine horsepower | 150 |
| Tires, front, singles | 13.00 x 24 |
| driving, tandem duals | 14.00 x 24 |

The overburden consists of a waste rock capping of rhyolite, conglomerate, and porphyry. It requires blasting and it is loaded by a 4½-cubic yard shovel with an average of 5 buckets. Figures 11, 12 and 13 give an excellent idea of the hauling loading, and dumping conditions. The average load is 40 tons of rock which weighs 2.16 tons per cubic yard. The load, solid measurement, is about 18.5 cubic yards and the equivalent loose load in the truck is probably about 25 to 30 cubic yards.

An analysis of a typical 4,500-foot hauling cycle with an uphill difference in elevation of 114 feet between the loading and dumping points is given below:

| | Minutes |
|---|---|
| Loading 40 tons by 5 buckets from 4½-cubic yard shovel | 3.0 |
| Hauling: | |
| 1,200 feet up 1½% grade at average 13.7 miles per hour | 1.0 |
| 500 feet up 2% grade at average 4.6 miles per hour | 1.2 |
| 1,600 feet up 5% grade at average 4.6 miles per hour | 4.0 |
| 1,200 feet at ½% grade at average 13.7 miles per hour | 1.0 |
| 4,500 feet up average 2.5% grade at average 7.1 miles per hour | 7.2 |
| Turning at dump | .5 |
| Dumping | .5 |
| Returning 3,800 feet over downgrade short cut to shovel at average 10.5 miles per hour | 3.5 |
| Net cycle time | 14.7 |

In the period from April, 1937, to February, 1943, the four trucks hauled 15,629,005 tons of material. This amounts to 3,900,000 tons in about 29,000 hours of operation for each truck. The tonnage hauled per truck-hour is 134, which checks with the above hauling cycle and daily production data.

Hourly Cost of Ownership and Operation of Type "B" Tandem-Drive Truck

(Note: In this series of articles it has been the practice to estimate the hourly cost of ownership and operation of the trucks and the unit costs for haulage so that there will be no relationship between the costs as given herein and the actual costs as obtained by the operator.)

| | |
|---|---|
| *Data:* | |
| Cost of truck | $18,000 |
| Cost of set of tires and tubes | 2,700 |
| Cost of truck for figuring depreciation, the tires and tubes to be set up as an operating account | 15,300 |
| Depreciation period, 5 years of 3,000 hours each; *hours* | 15,000 |
| *Fixed Charges:* | |
| a. Interest, taxes, insurance, storage, at 10% of the average value of the truck per year of 3,000 hours | $ 0.36 |
| b. Depreciation, straight-line method calculation with no salvage value | 1.02 |
| | $ 1.38 |
| *Operating Expenses:* | |
| c. Mechanical repairs, replacements, and labor thereto | $ 1.20 |
| d. Tires and tubes, complete set every 3,000 hours | .90 |
| e. Diesel oil, 3 gallons at 8 cents | .24 |
| f. Crankcase oil, 0.1 gallon at 60 cents | .06 |
| g. Grease and greasing labor | .12 |
| h. Driver | 1.00 |
| | $ 3.52 |
| Total hourly cost of ownership and operation | $ 4.90 |

*Unit Cost for Overburden Removal.*—On the basis of an hourly cost of ownership and operation of each truck of $4.90 and an hourly production of 134 tons or 62 cubic yards of solid rock the unit costs for haulage are tabulated below:

| | |
|---|---|
| Cost per ton | 3.6 cents |
| Cost per ton-mile | 4.3 cents |
| Cost per ton per 100 feet of vertical lift | 3.2 cents |
| Cost per cubic yard, solid measurement | 7.8 cents |
| Cost per yard-mile | 9.3 cents |
| Cost per yard per 100 feet of vertical lift | 6.9 cents |

**Ore Haulage** During the past seven years the focal point for the development of heavy-duty trucks of the type "A" 2-axle load-on-back and the type "B" 3-axle tandem-drive load-on-back has been in the Mesabi Range of Minnesota. These trucks are used for both overburden removal and for iron-ore haulage. At this time there are about 320 trucks of from 15 to 30 tons capacity on the range. As between type "A" and type "B" the trucks are divided more or less in this manner: Type "A" 2-axle load-on-back, 300 units; Type "B" tandem-drive load-on-back, 20 units. There are several units of the semi-trailer type "C" of capacities ranging from about 15 tons to about 40 tons.

One company is operating about 36 type "A" and about 20 type "B" trucks, and the type "B" trucks carry

Figure 13. Dumping 40 tons of heavy overburden. Because of abrasion and impact loads under the shovel, a stout truck is required.

an average load of about 20 long tons in overburden and iron-ore haulage. General specifications of the truck are:

| | |
|---|---|
| Rated load capacity | 60,000 pounds |
| Tare weight | 46,000 pounds |
| Gross vehicle weight | 106,000 pounds |
| Diesel-engine horsepower | 200 |
| Tires, front steering, singles | 13.00 x 24 |
| Tires, rear driving, tandem duals | 14.00 x 24 |
| Body capacity, level measurement, cubic yards. | 16 |

Herewith is a table giving the approximate loads which are hauled by the fleet of trucks:

| | *Long tons* | | |
|---|---|---|---|
| | Mine A | Mine B | Mine C |
| Iron ore | 20.1 | 19.2 | 18.8 |
| Surface stripping | 17.0 | ... | 15.0 |
| Rock | 15.0 | ... | 15.0 |
| Lean ore | 17.0 | ... | 17.0 |

Here follows a table giving various hauling-cycle characteristics and our estimated production data:

| | Mine A | Mine B | Mine C |
|---|---|---|---|
| *Iron-Ore Haul:* | | | |
| One-way distance, *feet:* | | | |
| Minimum | 700 | 150 | 1,000 |
| Maximum | 4,500 | 1,800 | 2,100 |
| Grades, *percentage:* | | | |
| Minimum | level | level | level |
| Maximum | +8 | +4 | +8 |
| Loading shovels, sizes in cubic yards. | 2, 2¼ 2½, 4 | 2¼, 2½ | 5 |
| Average loads hauled per hour | 3 to 6 | 5 to 7 | 3 to 6 |
| Long tons hauled hourly: | | | |
| Minimum | 60 | 96 | 56 |
| Maximum | 121 | 134 | 113 |
| Average | 90 | 115 | 85 |
| *Overburden or Stripping Haul:* | | | |
| One-way distance, *feet:* | | | |
| Minimum | 3,000 | ... | 750 |
| Maximum | 8,800 | ... | 3,000 |
| Grades, *percentage:* | | | |
| Minimum | Level | ... | level |
| Maximum | +8 | ... | +8 |
| Loading shovels, sizes in cubic yards. | 2, 2¼ 2½, 4 | ... | 5 |
| Average loads hauled per hour | 2 to 4 | ... | 3 to 6 |
| Long tons hauled hourly: | | | |
| Minimum | 32 | ... | 45 |
| Maximum | 64 | ... | 90 |
| Average | 48 | ... | 68 |

ESTIMATED HOURLY EXPENSE OF OWNERSHIP AND OPERATION OF ONE TRUCK

(Note: It has been stated previously that all costs in these articles are simply our own estimates and bear no relationship to the actual costs as secured by the operators.)

Since the Mesabi Range type "B" trucks are more or less similar to those described in connection with the overburden haulage at Ajo, Arizona, it is reasonably fair to assume that the cost of ownership and operation is about the same figure—$4.90 per truck-hour. Assuming a figure of $4.90 hourly for the cost of ownership and operation of the truck, unit costs are about as given in the following table:

Figure 14. This haul road is very well maintained. Grades are level to a maximum of plus eight per cent. Minimum haul is 750 feet, the maximum 3,000 feet. Trucks average from three to six loads per hour.

| | Iron Ore | Overburden Stripping |
|---|---|---|
| Mine A: | | |
| Average length of one-way haul, *feet* | 2600 | 5900 |
| Average grade, *percentage.* | +4 | +4 |
| Average hourly truck capacity: | | |
| Long tons | 90 | 48 |
| Cubic yards, solid measurement | .. | 27 |
| Unit cost, *cents:* | | |
| Per long ton | 5.2 | .. |
| Per cubic yard | .. | 18.1 |
| Mine B: | | |
| Average length of one-way haul, *feet* | .. | 1000 |
| Average grade, *percentage.* | .. | +2 |
| Average hourly truck capacity, *long tons* | .. | 115 |
| Unit cost, *cents, per long ton* | .. | 4.3 |
| Mine C: | | |
| Average length of one-way haul, *feet* | 1550 | 1900 |
| Average grade, *percentage.* | +4 | +4 |
| Average hourly truck capacity: | | |
| Long tons | 85 | 68 |
| Cubic yards, solid measurement | .. | 38 |
| Unit cost, *cents:* | | |
| Per long ton | 5.8 | .. |
| Per cubic yard | .. | 12.9 |

It should be kept in mind that it is not reasonable to expect a real comparison between unit costs and lengths of haul. Loading, hauling, and dumping conditions vary considerably among the three mines.

The foregoing Mesabi Range example and the Ajo, Arizona, example of the use of the same type "B" truck of about the same specifications are quite interesting. The higher unit costs secured on the Mesabi Range are no doubt largely due to the great difference in all-year-round operating conditions. Of special interest, however, is the fact that the Ajo operator is unquestionably overloading his trucks whereas the Mesabi operator is underloading his machines. There are two schools of thought on this subject of loads with respect to manufacturers' ratings—the overloading school and the underloading school—and there is something to be said on both sides.

My own opinion is that the load carried should be adjusted to suit the operating conditions, which is simply a matter of judgment. When haulroad and dumping conditions are average to poor the trucks should carry less than their rated load and when the conditions are average to good they should carry more than their rated load.

This article and the two previous two articles have treated of the characteristics and actual operations of type "A" 2-axle load-on-back and type "B" 3-axle tandem-drive load-on-back trucks. The next and final article will take up type "C" 3-axle tractor-trailer or "semi" trucks.

## Map Gypsum Deposits

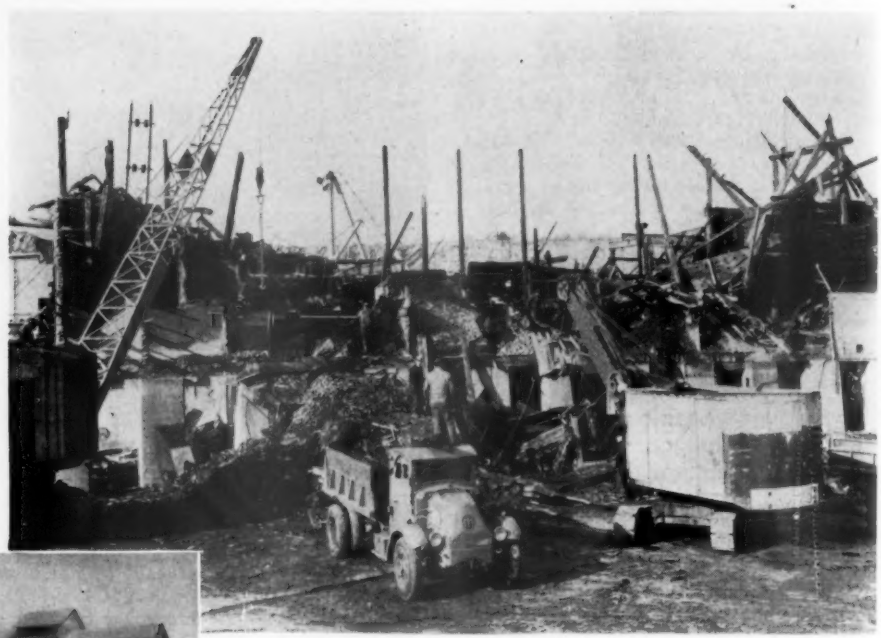
In anticipation of post-war demands for gypsum in the building field, a crew of trained "gypsum hunters" was recently active in the Grand Rapids-Brandville area of Michigan. Called the state's most valuable mineral by R. A. Smith, state geologist, the gypsum deposits were to be mapped and classified as to crystallization and purity. The findings will then be made available to manufacturers in this field.

The Kerford quarry near Atchison, Kansas, has been leased by the War Food Administration for the storage of from 60,000 to 70,000 tons of government-owned perishable foods. Modern blast-type refrigerating units are being installed.

# Old Colony Plant Destroyed by Fire Completely Rebuilt in Seven Months

## By Following New Design in Building Greater Capacity Is Obtained from the Same Number of Crushers and Screens

By W. E. TRAUFFER



Cleaning up the wreckage of the main crushing and screening building after the fire. Top of quarry face is visible in background.

Left.—View of new plant showing how it was designed with primary crusher and derrick and screening buildings in original locations. Tertiary crushing building is at left.

another ON THE SPOT report

THE new crushed stone plant of the Old Colony Crushed Stone Company at Quincy, Massachusetts, is an excellent example of the superiority of modern design and equipment over that of a few years ago. The company's old plant, which was originally built in 1926, was completely destroyed by fire February 14, 1944. This plant was described in the September, 1938, issue of PIT AND QUARRY, pages 86-88. The only important change made since that date was the replacement of the one remaining revolving screen with vibrating screens. The blaze, caused by a spark from welding repairs, destroyed the entire plant superstructure and bins, and all of the equipment except the 7 crushers and a dust-collector.

Officials of the company took prompt action to replace the plant and obtained an AA3 priority from the WPB to buy the necessary equipment. Thirteen vibrating screens were ordered from Allis-Chalmers and conveyors from Barber-Greene. The general layout of the new plant was worked out by A. L. Cassese, general manager of Old Colony, and I. K. Cox, designing engineer of the New York office of Allis-Chalmers' Crushing, Cement and Mining Division. The detailed design and construction was the work of Louis Anderson of Allis-Chalmers and Edward Blallock, plant superintendent.

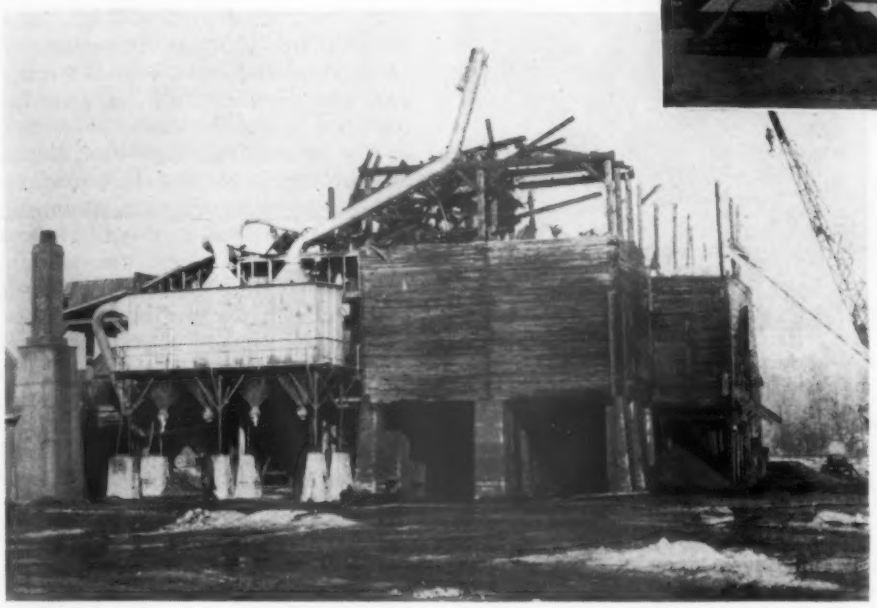
Little difficulty was experienced in obtaining delivery on the needed equipment but the lumber was another story. The larger timbers were obtained without difficulty but second-hand lumber only was available under 2 by 6 inches. In the meantime, the debris had been cleared

This view shows the belt-conveyor which carries stone from primary crusher through bin structure to scalping screen. Conveyors reclaiming stone from bins are also shown.

Right.—Dust-collector which will be connected to all dust sources.

Right.—General view of the Old Colony plant taken a few years ago before it was destroyed by fire.

Below.—Main building after fire. Only the bin foundations and the dust collector in foreground were undamaged.



away and the actual building of the new plant on the old foundations was begun on March 27. The contract for building the concrete bins was let to a local contractor and this work was completed June 1. The bins alone required 926 cubic yards of concrete. Heavy mat foundations are necessary because the plant is on swampy ground. The company's forces then built the superstructure and installed all the equipment. The plant went into operation on September 16 setting a speed record which would have been remarkable even in normal times. Even more remarkable is the fact that this work was done without accident and that the plant began producing immediately at nearly full capacity without even a minor "bug."

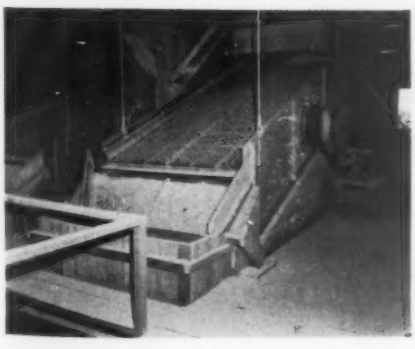
The new plant has a rated capacity of 4,000 tons in 9 hours as compared to 2,500 tons for the old plant, this with the same 7 crushers and with 13 screens, the same number and approximately the same size as those destroyed. Several reasons are given for this increase in capacity. In the old plant 2 crushers and 4 screens were used only when certain sizes were made and were consequently idle much of the time. The new plant is so designed that each unit has a job to do regardless of the products being made and there are no bottlenecks. In the old plant 4 bucket elevators were used. In the new plant belt-conveyors are used throughout. It is also said that the new Allis-Chalmers Ripl-Flo screens are more efficient than the Low-Head screens they replaced. The old crushing arrangement ahead of the first screens was a 2-stage affair. Now the stone from the primary crusher goes over a scalping screen which takes some of the load off the secondary crushers. In order to get the necessary height of feed to this screen the conveyor from the primary crusher, which is in its original location, had to be extended through the bin structure. This feature contributes considerably to the compactness of the plant.

In its first day of operation the plant produced 2,000 tons of crushed stone and since then has exceeded this figure. Only the manpower shortage is holding the output below the rated figure. At full capacity the power demand and the plant crew are the same as in the old plant. Only a few additional truck drivers are required to haul the greater amount of material to and from the plant.

The deposit is locally known as a bastard trap rock with occasional thin strata of granite between the strata of trap rock. Actually, while the rock is full of seams, there is no definite stratification and the formation is very irregular, presenting a difficult drilling and blasting problem. The overburden is fairly heavy and is removed the year around by a shovel and trucks. The U-shaped face is about 2,000 feet long and is up to 100 feet high.

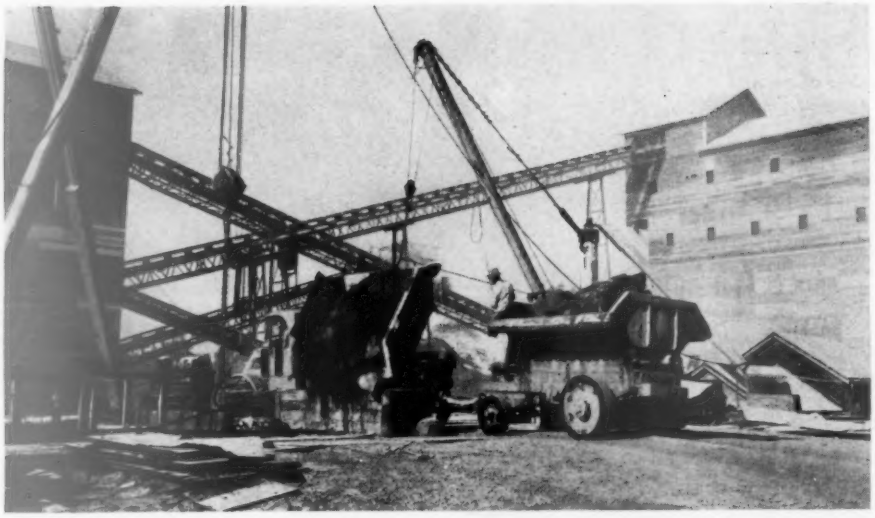
The drilling is done with two 6½-inch well drills. About 18 or 20 holes are kept drilled ahead but only 2 can be shot at a time because of the proximity of a residential district. Each 2-hole shot brings down about 15,000 tons of rock. The drilling and blasting was continued while the new plant was being built with the result that over 50,000 tons of rock has been shot down along a considerable length of the face. The drilling for secondary blasting is done

The two 6- by 14-foot double-deck screens which make first 2 coarse sizes of stone.



The two 10-inch tertiary crushers. The one at right is direct driven by motor above spider.

V-belt drive of conveyor No. 3 to scalping screens over tertiary crushers.



Hoist dumping rock from one of truck-and-trailer units to primary crusher. Conveyors between tertiary crusher building and main building are in background.

with jackhammers using straight steel but much of the rock is also broken down by a 3-ton iron ball handled by a Marion steam crane with a 57-foot boom.

The stone is loaded by 2 Marion Type 37 steam shovels with 2-cubic yard dippers into 5 Mack Bulldog trucks with 6-ton Easton Phoenix side-dump bodies. Two of these trucks haul rubber-tired trailers with similar bodies. Because of the location of the primary crusher near the center of the U-shaped face the length of haul is only about 500 to 600 feet. The stone is dumped from the trucks by means of a hook operated by a stiff-leg derrick which is also used to operate a stone hook and to handle the primary crusher parts. The Shepard-Niles electric hoist is operated by a push-button control system at the dumping point.

The minus-7-inch product of the 48- by 60-inch Allis-Chalmers jaw crusher is carried on a 42-inch by 194-foot Barber-Greene belt conveyor (No. 1) through the bin structure to the scalping screen. This is a 5- by 12-foot Allis-Chalmers Style C 2-deck screen with 5-inch and 2½-inch openings on the top and bottom decks, respectively. The top deck is made of special heavy perforated plate with manganese steel bars welded lengthways to the plate to absorb the wear. This deck is in 3 sections so that the first section, as it becomes worn from the stone falling on it, can be reversed and then replaced by one of the other sections. This arrangement makes possible six changes before the screen plate needs to be replaced or rebuilt.

On the bottom deck the first 20 inches of 2½-inch wire cloth has been covered with ½-inch cloth bolted to it. This arrangement allows fines and dirt to drop into a box from which it is chuted to a waste pile. The heavy cloth underneath protects the fine cloth from damage due to the impact of the stone falling on it.

The stone passing over both decks of the scalping screen (2½- to 7-inches) is split to a pair of Allis-Chalmers 16-inch McCully gyratory crushers for secondary reduction. The minus-2½-inch stone through the bottom deck of the screen, and the minus-3-inch product of the crushers, is carried on a 36-inch by 108-foot Barber-Greene belt-conveyor (No. 2) to a junction house. There the rock drops through a spill box on a 36-inch by 171-foot Barber-Greene belt-conveyor (No. 3) to the tertiary crushing building. There the minus-3-inch stone is discharged on two 5- by 12-foot Allis-Chalmers Ripl-Flo 2-deck screens. These are ordinarily equipped with 2½- and 2¼-inch wire cloth, the top deck merely taking some of the wear off the bottom one. The material passing over both decks is chuted into a surge or feed box between two Allis-Chalmers 10-inch gyratory reduction crushers, one a McCully and the other a Newhouse. The minus 2¼-inch product of these crushers is carried on a 24-inch by 125-foot Barber-Greene belt-conveyor (No. 4) back to conveyor No. 3, forming a closed circuit.

All the stone eventually passes through the bottom decks of these screens and through a spill box on a 36-inch by 153-foot belt-conveyor (No. 5) to the top of the screening and storage building. A pant-leg spill box splits the stone to a pair of 6- by 14-foot Ripl-Flo 2-deck screens which are the first units in a duplicate screening and conveying system over the two rows of storage bins. These screens are usually equipped with 1¼- and ⅞-inch cloth on their top and bottom decks. The two top sizes—2¼- to 1¼-inch and 1¼- to ⅞-inch—drop through chutes into individual bin compartments.

The minus-⅞-inch stone through the bottom decks of these two screens is carried on two duplicate 24-inch by 66-foot belt-conveyors (No. 6 and 7) to pant-leg chutes feeding two pairs of 4- by 12-foot Ripl-Flo 2-deck screens. These have ½- and ⅜-inch wire cloth on their top and bottom decks, respectively. Here also the two top sizes—⅞- to ½-inch and ½- to ⅜-inch—drop through chutes into individual bin compartments.

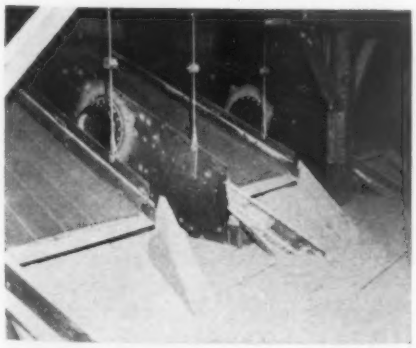
The minus-⅜-inch stone passing through the bottom decks of these screens is carried on two duplicate 18-inch by 42-foot belt-conveyors (No. 8 and 9) to pant-leg chutes feeding two pairs of 4- by 12-foot Ripl-Flo single-deck screens. These are equipped with ⅛-inch wire cloth. The ⅜-inch stone passing over these screens and the dust passing through them drop into separate bin compartments.

The 3,000-cubic yard bin structure is divided into two rows of 7 compartments each, one row under each of the duplicate screening and conveying systems. Ordinarily both systems make the same sizes of materials which go to opposite compartments

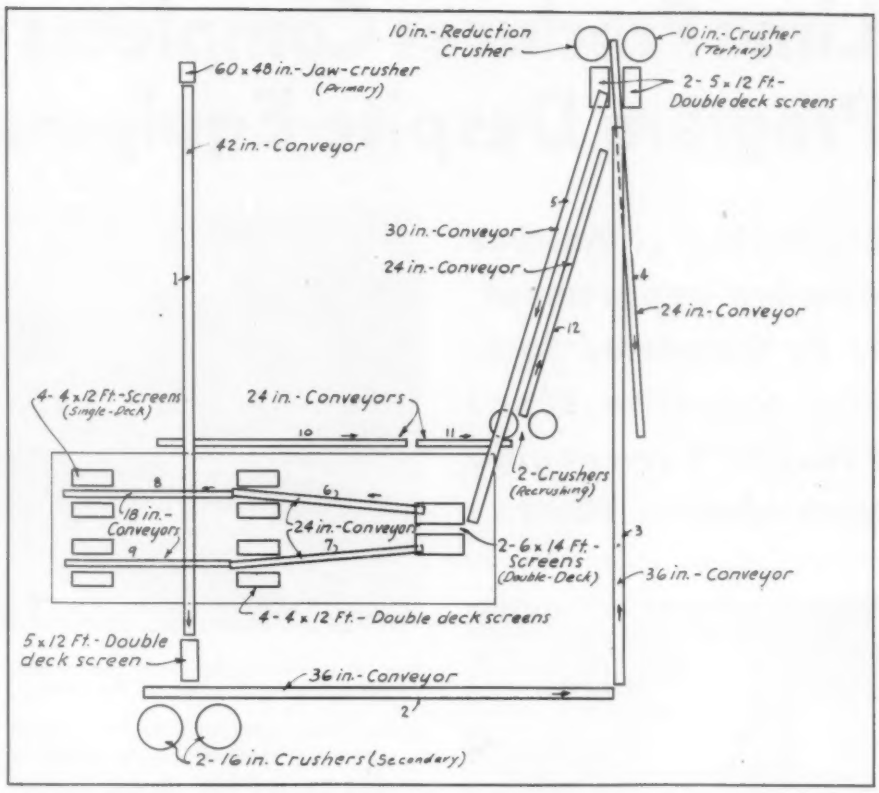
Another view of plant which shows the arrangement of conveyors between tertiary crusher building at right and main building in background.

in the two rows. On occasion the screen cloth can be changed on either or both systems to make different sizes but this has not yet been necessary. At the appropriate height in the concrete partition between opposite compartments there is a 4- by 6-foot opening so that if one compartment is filled up while the other is down the excess material will overflow into it. This not only equalizes the load on the foundations but also makes possible the utilization of the maximum bin capacity under any conditions. Lever-operated clamshell gates are used to load railroad cars or trucks under each of the two rows. Cars can be loaded on either side while trucks are loaded on the other but an effort is made to do all the car loading on one side. Most of the output is at present being delivered in trucks and this leaves one row free all the time and the other part of the time for truck loading.

The bin compartments in one row have discharge openings with slide gates in their outer walls through which the materials in them can be reclaimed for various purposes. Through these gates the various sizes can be discharged either singly or blended on a 24-inch by 69-foot horizontal belt-conveyor (No. 10). A removable chute can load the stone direct into cars. Ordinarily, however, this system is used for the reduction of some of the larger sizes of stone and this conveyor discharges the stone on a 24-inch by 52-foot conveyor (No. 11). This in turn feeds the stone to a pair of Allis-Chalmers Size 636 Type R fine-reduction gyratory crushers with hydraulic head supports which make possible adjustment of their openings while in operation. The openings of these crushers are usually set to produce minus 3/8- or 5/16-inch stone. This is discharged on a 30-inch by 154-foot belt-conveyor (No. 12) to the No. 10 or tertiary crusher building. There it is discharged into the spill box under the two 5- by 12-foot final scalping screens which receives



The 4- by 12-foot single-deck screens which make fine stone and dust.


10 in.- Reduction Crusher
10 in.- Crusher (Tertiary)
60 x 48 in.- Jaw-crusher (Primary)
2- 5 x 12 Ft.- Double deck screens
42 in.- Conveyor
30 in.- Conveyor
24 in.- Conveyor
24 in.- Conveyor
4- 4 x 12 Ft.- Screens (Single-Deck)
24 in.- Conveyors
2- Crushers (Recrushing)
18 in.- Conveyors
24 in.- Conveyor
2- 6 x 14 Ft.- Screens (Double-Deck)
36 in.- Conveyor
4- 4 x 12 Ft.- Double deck screens
5 x 12 Ft.- Double deck screen
36 in.- Conveyor
2- 16 in. Crushers (Secondary)

Sketch of plant layout showing arrangement of conveyors and other equipment.

the material through their bottom decks and discharges on conveyor No. 5 to the screening building.

It has been stated that all the crushers and screens are of Allis-Chalmers manufacture. All the conveyors are new Barber-Greene sectional units and are equipped with the new Barber-Greene friction band-type automatic hold back. Several makes of conveyor belting are used, including Goodrich, Hewitt and U. S. Most of the electric motors are of Allis-Chalmers manufacture and all drives are through Texrope V-belts except the primary crusher which is flat-belt driven.

All the electric motors in this plant have individual local controls and there are four central control stations—at the secondary crushers, the tertiary crushers, the reduction crushers, and the screening building.

The 4-compartment Sly dust collector, which came through the fire undamaged, has not yet been connected up to the new equipment. As soon as possible it will be enlarged and connected to all dust points.

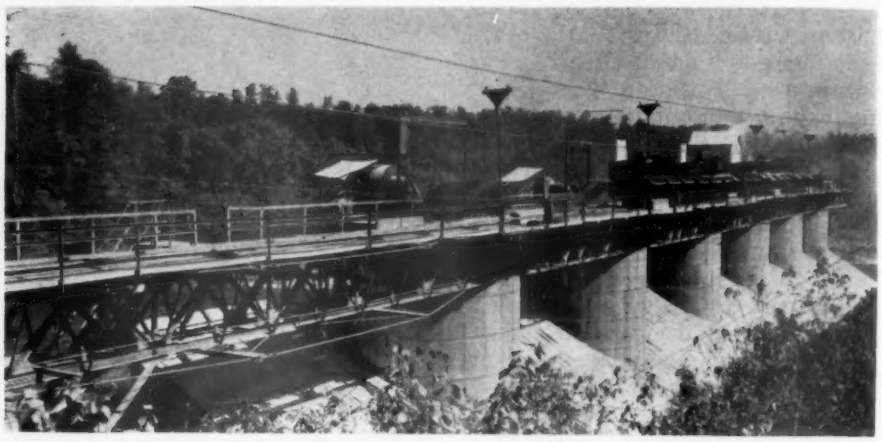
The company operates a bituminous concrete plant on the same property which has a capacity of 1,500 tons daily. This was completely described in the article previously referred to. In normal times a large part of the output of the crushed-stone plant goes through this plant. Since the peak of the war construction boom the demand for stone has fallen off considerably but that for bituminous mixtures has remained high. For this reason the 50,000 tons of various sizes of aggregates which the company had in stockpiles at the time of the fire was reserved exclusively for use in this plant. The wisdom of this decision is evident from the fact that only 300 tons of 5/8-inch and 50 tons of 1/2-inch stone remained in stock piles when the new plant went in operation. All other sizes had been used up and some had to be purchased from other local producers in order to keep the asphalt plant going.

(*Continued on page 73*)

Edward Blalock, plant superintendent and Anthony L. Cassese, general manager.

# Lime Producer Completes Improvement Program Despite Equipment Shortage

## Expansion of Agstone Grinding Department, to Be Completed Soon, Will Signalize Final Phase of Far-ranging Modernization Effort



View of kiln-feed trestle with train of cars discharging stone into the six vertical kilns.

another ON THE SPOT report

By WILLIAM M. AVERY

An extensive and far-ranging three-year improvement program has recently been brought to a successful conclusion at the plant of the Batesville White Lime Company, Batesville, Arkansas. Undertaken in the very teeth of acute equipment and material shortages, the program included extensive mechanization of the quarry, the installation of lime-yard conveyor equipment, the redesigning and rebuilding of lime-burning kilns, the installation of a modern cooling conveyor, and innumerable smaller improvements throughout the plant.

The portion of the program having direct bearing on the production of agricultural limestone has been delayed temporarily pending the shipment of new pulverizers. When these have been placed in operation they will increase the productive capacity of the plant to about 800 tons of agstone per day.

The improvements at the quarry include the installation of a 42-inch by 14-foot Pioneer roll-grizzly used as a feeder and a 32- by 40-inch Pioneer jaw crusher for primary crushing. A new all-steel-frame inclined belt-conveyor has been built to carry the stone from the primary crusher to the top of the storage bins. Built to replace an old structure which collapsed some months ago, the new conveyor is 30 inches wide by 225 feet long on a slope of about 18 degrees. The steel work in the trestle consists of a 4-inch extra-strong and 2-inch standard-pipe bracing, while 1-inch standard pipe and 3- by 3- by ¼-inch angles were used to build the trusses. Unable to obtain the priorities for new material, the management accumulated the necessary steel by a painstaking search of scrap and junk dealers' yards over a period of many months. The structure was electrically welded throughout, and, despite its spidery appearance, it has great rigidity.

The stone drops from the conveyor into a steel chute which has the now-widely-used built-in pocket just under the head pulley to reduce wear on the screen plates. All the screening at the quarry is done by an Allis-Chalmers 4- by 10-foot, double-deck vibrating machine mounted above the bins. At the present time only the upper deck, with 5-inch square mesh is in use, but eventually it is planned to fit the bottom deck with 1½-inch mesh to obtain agstone feed. The plus-5-inch material is kiln stone which may reach an upper limit of 9 or 10 inches, while minus-5-inch is used as feed for the ballast and agstone plants.

The two-compartment quarry bin, which was installed as part of the improvement program, has a structural-steel frame and is 20 feet wide, 60 feet long and 20 feet high. It has a total capacity of 1200 tons.

At present the lime kilns are consuming about 500 tons per day of the plus-5-inch stone, and this material is taken directly from the quarry bin to the kilns. About 200 tons of kiln stone per day is being used to build up a stock pile in the quarry to cushion the plant against delays in the quarry. On a production of 700 tons of plus-5-inch stone the primary crusher turns out approximately 500 tons of minus-5-inch stone, which is transported from the bins to the ballast and agstone plants.

Although the stone quarried at Batesville analyzes as high as 99 per cent. $CaCO_3$, the operators may justly feel that this unusually high purity is by way of being a well-earned bonus, for the deposit in other respects leaves much to be desired. The clay overburden ranges from 5 to 15 feet in depth, and the laminated rock immediately beneath

General view of plant with some of kilns visible in background. The hydrating department is at left.

it, which must also be removed, varies from 5 to perhaps 25 feet. Considerable blasting is necessary to assist the stripping operation, and a Sullivan wagon drill and jackhammers are used for drilling the blast holes.

The valve-bag packer used for sacking calcium flour.

Thew-Lorain 75-B steam shovels, of which there are 3 in service, handle the stripping of the laminated stone from the upper ledge of the quarry, and this material is hauled to one end of the quarry where it is dumped over a shallow bank, hand-picked and loaded into small cars for ultimate shipment, without further processing, as railroad rip rap. The solid rock below the laminated material averages 40 feet in depth on the present working face, and presents no serious difficulties except for the extensive mud seams encountered from time to time.

Two Keystone self - propelled churn drills are used for drilling on the cleared ledge. The blast holes, of which there are about 25 in a single row to the average shot, run from 30 to 55 feet in depth, and are loaded with 60 per cent. gelatin dynamite in the bottom and 40 per cent. near the top. The practice of shooting in a single row is not in this instance a matter of preference on the part of the operators. They dream somewhat wistfully of a far-off day when the stripping work will perhaps be far enough ahead to make possible two-row shots, though no one is so abandoned in his optimism that he believes this event will precede the millenium by more than an hour or two.

Despite the mud seams, the single-row shots and other annoyances, it is said that about 5½ tons of rock is brought down per ton of dynamite. A considerable amount of secondary blasting is done with 20 per cent. gelatin dynamite to reduce oversize rocks to crusher size. All the shots are detonated with Primacord.

The rock is hauled to the primary crusher from the foot of the present 1,400-foot working face in 6-cubic-yard Koehring Dumptors. Three of these machines are in service at present and two more have been ordered.

The haul from the quarry to the plant is 2½ miles over a well-maintained 36-inch gauge railroad. Five steam locomotives and one gasoline locomotive are in use on this line, and recently a standard-gauge gasoline locomotive was purchased to be used wholly for intra-plant switching of railroad cars. All-steel Easton and Koppel type rocker-dump cars of 2-cubic yard capacity are used for transporting kiln feed, while ballast and agstone feeds are moved in Austin-Western side-dump cars of 5-cubic yard capacity. About 75 cars of each type are kept in operation constantly. Single trains move 25 to 30 of the small cars, or 10 to 13 of the large size.

The track at the plant is level with the steel trestle which extends across the tops of the 6 lime kilns. The dump cars containing kiln feed are spotted on the trestle by the locomotive and left there to be shifted back and forth by means of a two-drum electric hoist. A loaded train is kept on the 400-foot trestle at all times and each kiln receives about 1 carload of stone per hour in response to a signal from the operator below. After a car has been accurately spotted over the kiln it is dumped by hand through a door in the kiln roof.

The 30-inch by 225-foot inclined belt conveyor from the primary crusher to the screening plant.

Each of the 6 kilns at Batesville has an outside diameter of 18 feet and a height from top to bottom of 46 feet. Five of the kilns have an inside 6- by 10-foot section while the sixth kiln has an inside 7- by 13-foot section. The latter kiln was torn down completely as part of the improvement program and rebuilt as a full Azbe installation with the draft taken through a duct in the center burner. The 5 smaller kilns were rebuilt for a distance of about 7 feet up from their bottoms in order to incorporate Azbe center burners, but the blast on these is taken through the bottoms, making them only partial Azbe installations.

All the kilns have been totally enclosed at the top and induced-draft motor-driven fans installed; a Claridge No. 25 in the case of the 7- by 13-foot kiln and Phelps No. 21's on the 6- by 10-foot kilns.

Dumping calcined lime into first draw hopper. Cooling conveyor in background.

View across quarry. Primary crusher on the left. Screening plant and bins on the right.

Although natural gas has been used in the town of Batesville for the past 15 years, it did not become available at the lime plant until early in 1942. The company abandoned wood burning immediately and, with no change in the design of the kilns, the production per kiln jumped at once from 20 tons to 35 tons per 24 hours. About a year after the change to natural gas fuel was made work was started on the installation of the Azbe center burners. Production on the kilns partially converted to the Azbe design rose to 55 tons per 24 hours, and the full Azbe kiln is now producing 80 tons in 24 hours. This threefold increase in the productive capacity of the existing kilns in less than three years by redesigning them is unquestionably the outstanding feature of the Batesville improvement program. It would be an impressive performance at any time, but surely it gains both stature and significance by virtue of its having been carried through despite the material shortages and restrictions necessitated by the most critical war effort in our history.

Formerly it was the practice to draw the lime from the kilns into small hand carts and dump it on the floor to cool. Since this procedure was extremely wasteful of one of the most critical war necessities (man-hours), it was determined as part of the general improvement program to install a modern cooling conveyor. The new lime-handling layout, which was furnished by the Stephens - Adamson Manufacturing Company, consists of the following. A hot-draw lime hopper above a 36-inch apron-feeder handling 33 tons per hour of 10-inch burned lime at a speed of 10 feet per minute, and a first-draw lime hopper above the tail shaft of a 60-inch wide by 9-inch pitch style D pan-conveyor picking table having a rise of 5½ inches in 12 inches. The total length of this cooling conveyor is now about 77 feet, but plans are already worked out for lengthening it to facilitate handling. This conveyor has a Reeves variable-speed motor drive by means of which the travel can be regulated from 10 to 20 feet per minute.

The burned lime is drawn into 2-cubic yard side-dump cars which run on short 36-inch gauge tracks under the kilns. By means of a turntable at each kiln the cars are pushed by hand onto a long track flanking the 6 kilns on one side and the cooling conveyor on the other side. The cars are dumped directly into either the hot-draw lime hopper or the first-draw hopper.

The cooling conveyor discharges into a new Stephens-Adamson 24- by 18-inch Knittle crusher with manganese steel bars set to reduce the 10-inch lumps of burned lime to the maximum size of 1½ inches. This crusher, which has a capacity of 15 tons per hour, tends to reduce the material to cubes. There is a grizzly screen (4- by ½-inch openings) in the bottom of the chute above the crusher to take out the dust and allow it to by-pass the crusher. For customers who want kiln-run lime there is also a means provided to by-pass the crusher entirely, loading the burned lime directly from the cooling conveyor into railroad cars for shipment.

The crusher discharges into a bucket-elevator which in turn discharges the lime on a 3-deck Niagara vibrating screen. The minus-¼-inch material passing the bottom deck of the screen is stored in a tank bin to be used as hydrator feed. The minus-¾-inch stone passing the middle deck, the minus-1¼-inch passing the upper deck and the plus-1¼-inch oversize are stored in separate tank bins. The capacity of the dust tank is 80 tons, the two tanks for pebble sizes hold 50 tons each, and the fourth tank (for oversize stone) holds 300 tons. The last-mentioned is an old lime kiln with the lining removed, one of three measuring 18 feet in diameter by 40 feet in height, purchased some time ago with this use in view. The plant can now store 1,000 tons of quicklime.

Number 3 pulverizer, one of four used for producing agstone.

The 60-inch by 77-foot lump lime conveyor.

The pebble sizes of lime can be loaded directly from the storage tanks by gravity into open-top cars, and in addition the bins may be drawn from for sacking material. The minus-¼-inch material flows by gravity to a Hardinge constant-weight feeder, which feeds a bucket-elevator discharging into the hydrating system. This is a standard Kritzer 6-cylinder continuous hydrator having a capacity of 6 tons per hour. The lime passes from the hydrator to a Raymond air-separator from which the minus-300-mesh material is sacked and shipped as hydrated lime. Everything coarser than 300-mesh is rejected and marketed as agricultural limestone. St. Regis bagging machines and International paper bags are used in all sacking operations.

In this department there is also a Raymond 5-roll, high-side mill which is used for grinding calcium flour.

Paper mills, alumina producers, water-treatment plants and oil and

sugar refineries are the major consumers of burned lime from Batesville. In normal times, of course, a large tonnage is used in the construction industry.

The Batesville organization was created in 1907 as the Arkansas Lime Company at Ruddells, Arkansas, on the White River 35 to 40 miles north of Batesville. Despite a plethora of operating and shipping difficulties due to the extremely rugged character of the site, 3 kilns were operated at Ruddells until 1930, when the entire plant was dismantled. In 1924 the company purchased the present quarry property located about 4.2 miles northwest of Batesville by railroad, and in the same year the firm's name was changed to the Batesville White Lime Company. Three kilns and a hydrating plant were built at once

The 5-roll high-side mill used to grind calcium flour.

on the new site, and in 1927 three additional kilns were built. The railroad ballast plant at Batesville was built in 1929 and the fine-limestone plant followed in 1938.

The ballast plant has Allis-Chalmers equipment throughout. Located on the face of the bluff back of the main plant, the ballast plant utilizes the steep ground slope extensively in its layout. The trains of side-dump cars are pushed in on a single-track siding at the top of the bluff and left to be moved back and forth by a two-drum car spotter. The cars dump directly into a Number 16 Superior McCully crusher in which the minus-5-inch stone is reduced to about minus-2½-inch. A Number 8 Superior McCully crusher receives and reduces the over size from the primary crusher.

In the ballast plant proper the screening is accomplished by 48-inch diameter by 12-foot long rotary screens located under the primary and secondary crushers and above the bins. The oversize from the second rotary screen returns in closed circuit over a belt-conveyor to the

Left: H. C. Martin, general superintendent; right: L. E. Smith, secretary, treasurer and general manager.

secondary crusher. An 8-compartment concrete bin below the crushing and sizing plant provides storage space for a wide range of sizes.

Two Allis-Chalmers Number 3 pulverizers are now producing agricultural limestone, but a third Number 3 machine is on order and a new Number A24 pulverizer of the same make will probably be in service by the time this has been printed. It is conservatively expected that when all four pulverizers are in operation the plant will produce 800 tons of agstone per day.

Close-up of No. 1 kiln showing fan and rig for opening charging door.

At present the chief outlet for Batesville stone on a tonnage basis is unquestionably the agricultural-limestone market, and with the new pulverizing capacity the management expects to be in a position to take full advantage of this demand.

A considerable amount of screened minus-5-inch stone has been shipped since the outbeak of the war as chemical limestone for use in a sintering process connected with the production of aluminum, and the plant's calcium flour is widely used in feeding stock.

Out of a normal total working force of 150 men employed in the Batesville plant almost 100 have entered the armed forces since Pearl Harbor. The direct loss to the plant operations has been qualitative rather than quantitative, since the working force has been maintained at about the pre-war level.

T. R. Myers is president of the Batesville White Lime Company and maintains an office at Little Rock, Arkansas. T. E. Smith is in charge of the main office at the plant near Batesville. He is secretary, treasurer and general manager of the company. H. C. Martin is general superintendent of the plant.

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**Plant Fire** *(from page 69)*

Most of the asphalt produced has gone into the construction of shipyards, including the Boston Navy Yard, air fields, and similar war projects. Among the jobs supplied in 1943 were the Squantum Air Base, Hingham Ammunition Depot, Weymouth Air Base, Charlestown Navy Yard, South Boston Army Base, Simpson Dry Dock, East Boston Naval Fuel Oil Depot, etc. This work included runways, roadways, access roads, etc. During this period crushed stone was also supplied for the Taunton Staging Area, Camp Edwards, Well-Fleet Anti-Aircraft Camp and similar projects.

This year most of the bituminous concrete has gone into streets and highways for the state, cities and towns.

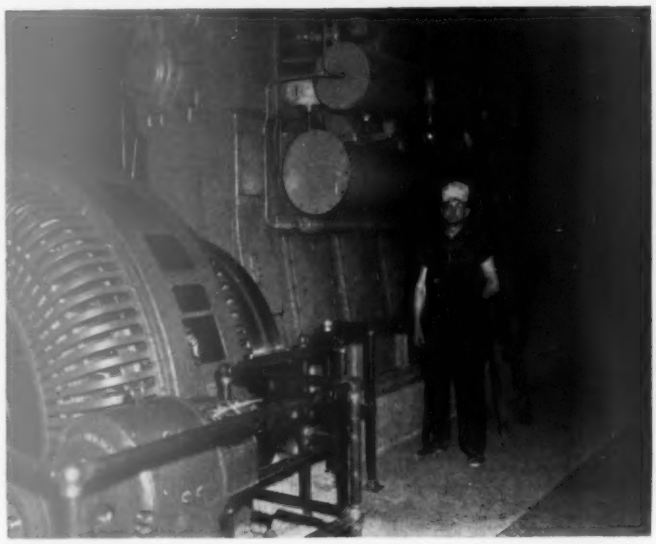
Adequate stockpiles are again being built up as fast as conditions allow. Trucks are loaded from these piles by a Barber-Greene stock-pile loader and a 1¼-cubic yard Osgood shovel. The company owns 27 delivery trucks and hires others as needed.

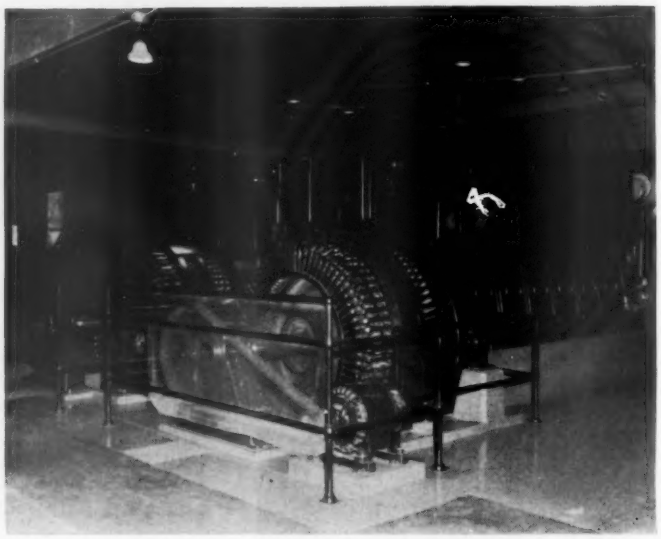
As soon as possible the production of rip rap will be resumed. For this material the primary crusher will be opened up to 8 inches and the oversize from the scalping screen will be chuted to a pile. The shovel will load this material into cars or trucks for shipment.

On its property the company also has a blacksmith and machine shop equipped with a forge, well-drill sharpener, etc.

Officers of the Old Colony Crushed Stone Company are: H. G. Fairfield, president and treasurer; John Fairfield, vice president; Anthony D. Cassese, assistant treasurer and general manager.

# Power Demands Met By Adding Fourth Diesel





• 1,000-horsepower Diesel engine, left, has 8-cylinders, 14½-inch bore, 20-inch stroke, 300-r.p.m. J. T. McDiermon, beside engine, has charge of power plant.
Above—General view of the engine room. Shown in foreground, center and background are three sizes of Diesel engines.

another ON THE SPOT report

THE Columbia Quarry Company has recently installed its fourth National-Superior Diesel engine for generating electric power at its crushed-stone plant at Krause, Illinois. The new engine, a type VDSS unit rated at 1,000 horsepower and direct-connected to an Allis-Chalmers 480-volt generator, supplies power for the revamped and expanded agstone pulverizing plant previously described.[1]

The installation of Diesel power-generating equipment at the Krause plant dates back to August, 1936,[2] when the first two units, Superior 12½-by 15-inch 4-cycle machines rated at 525 horsepower and 400 horsepower, were placed in operation to supplant the power previously obtained from the East St. Louis, Columbia & Waterloo Railway. In September, 1941, a third engine, a 500-horsepower type KNB 12-by 15-inch Superior, was installed to meet the growing power demands of the plant, but despite this foresight it was found necessary to install a fourth machine in connection with the concerted effort to increase agstone production.

The new 1,000-horsepower 8-cylinder engine has a 14½-inch bore and a 20-inch stroke. It is direct-connected to an Allis-Chalmers 875 kv.-a., 480-volt, 3-phase, 25-cycle, 300-r.p.m. generator. Unlike the three earlier machines, it is supercharged by an Elliott turbo charger. All the engines are started by compressed air supplied at 250 pounds pressure from individual receivers.

**By WILLIAM M. AVERY**

The fuel oil is brought to the plant in tank trucks and placed in a 15,000-gallon outside storage tank. Each engine has its own Viking fuel pump connected directly to the fuel tank. The entire plant is producing an average of about 11.5 kilowatt-hours per gallon of Shell Dieseline fuel oil.

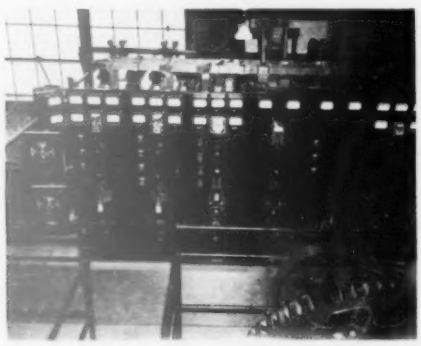
The power plant is housed in a 44-by 90-foot steel-and-stone building formerly used as a garage. The walls, which are of dimension stone up to the eaves, carry the rails for an overhead traveling crane. The crane is equipped with a 10-ton chain hoist which serves the engines and other equipment in the building. A new garage building for servicing trucks has just been completed.

The cooling water for the engines is circulated through an outdoor cooling tower adjacent to the power plant. Built by the Cooling Tower Company, it has a steel collecting base and an atmospheric-type heat

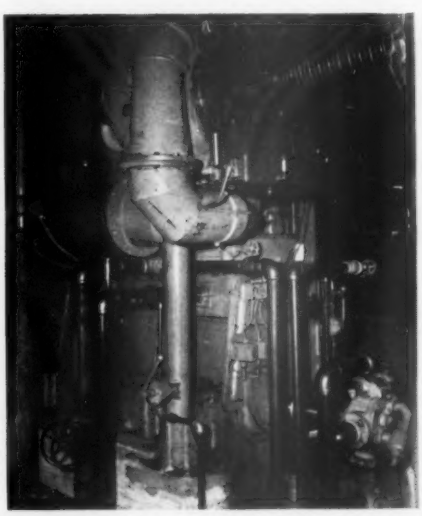
(*Continued on page* 80)

[1][See Avery (William M.). *Columbia Quarry Ups Capacity to Meet Huge Demand for Agstone.* PIT AND QUARRY, November, 1944, pages 93-94.—ED.]

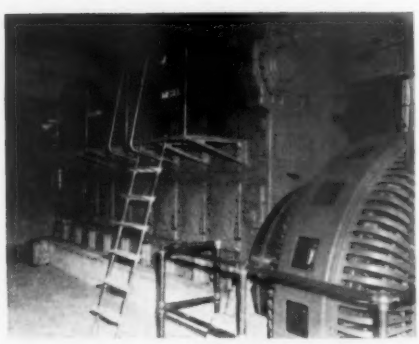
[2][See Trauffer (W. E.). *Installs Diesel-Driven Generators for Dependable and Low-Cost Power.* PIT AND QUARRY, March, 1937, pages 84-86.—ED.]



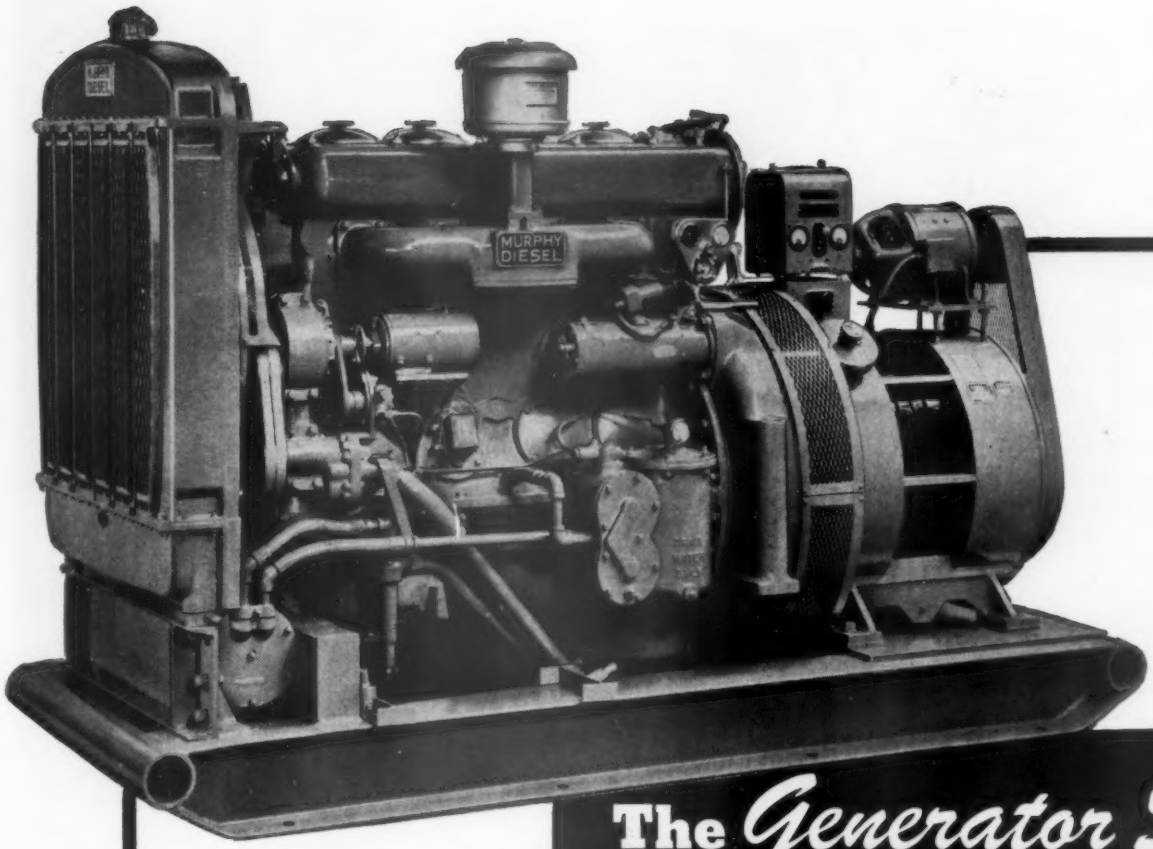
Instrument panel and switchboard of the control system.



The turbo charger and fuel pump on the 1,000-horsepower Diesel engine.



Another view of the 1,000-horsepower Diesel, direct-connected to 700 kw. generator.

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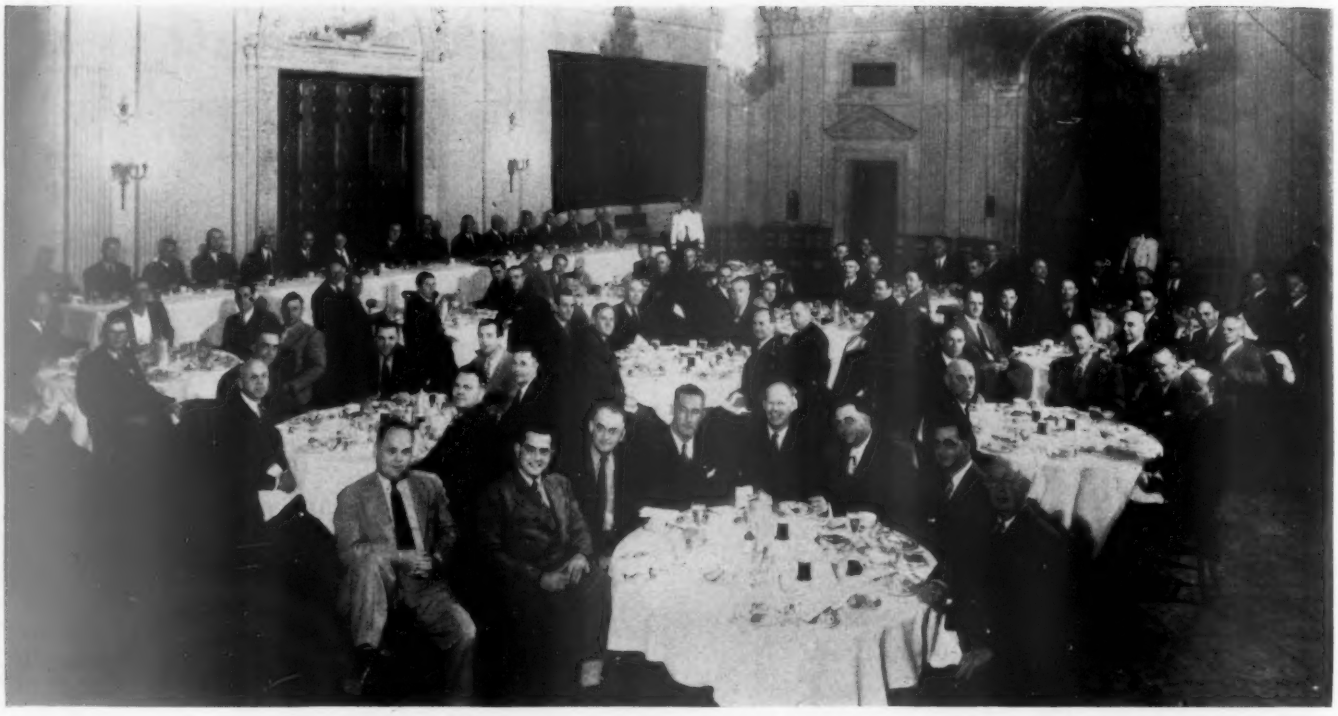


# Noted Engineer Stresses Research at Meeting

another ON THE SPOT report

THE largest group of sand-and-gravel and ready-mixed-concrete producers ever to meet at one time in Los Angeles assembled in the Music Room of the Biltmore Hotel on the evening of November 8 to greet Stanton Walker, director of engineering of the National Sand & Gravel Association and the National Ready Mixed Concrete Association. The meeting was the culmination of a 10-day swing through California by the associations' noted technical authority and was preceded by meetings with state officials and engineers in the statehouse at Sacramento on November 3, and with northern California producers on November 6 at the Palace Hotel in San Francisco.

Robert Mitchell, president of the National Sand & Gravel Association and head of the Consolidated Rock Products Company, Los Angeles, met Mr. Walker on his arrival at Sacramento, accompanied him to San Francisco and southward down the coast to Los Angeles. He served also as chairman at the gathering at the Biltmore and introduced Mr. Walker to his listeners who numbered 82, including producers, engineers, city and county officials, and other guests.

Mr. Walker outlined the varied functions of the two national associations, placing special emphasis, however on their research activities, the development of which he traced over the last twenty years. He dwelt at some length on the success attained in the simplification of sizes for coarse aggregates and the adop-

**By HARRY F. UTLEY**

tion of association recommendations along this line by such bodies as the American Society for Testing Materials, the American Association of State Highway Officials, and the Federal Specifications Board. He pointed out the benefits to both producers and users alike of the present standardization of sizes.

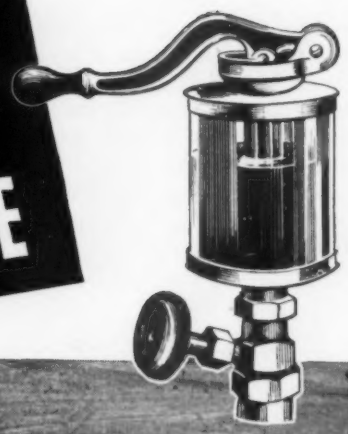
An important phase of Mr. Walker's talk dealt with research developments in fine aggregates. Operators are faced with more difficult production problems with the smaller sizes as specifications approach rigidity. So strict have these become in some areas, Mr. Walker pointed out, that some deposits, heretofore considered excellent sources of materials, have been all but abandoned because of the impossibility of meeting requirements. Within reasonable limits, the present trend toward specifying higher amounts of exceedingly fine materials has much to recommend it, he said. However, as specifications call for higher percentages of extreme fines the natural tendency of the producer is to eliminate much of his previous efforts to produce, by washing and scrubbing, a clean sand with the result that silt and other deleterious fines show up in the finished product to the detriment of the finished concrete, thus defeating rather than winning the specification writer's goal. Another method of increasing the percentage of fines, that of including crusher tailings, is frowned upon but the practice exists nevertheless as the harassed producer seeks in some way to meet the next-to-impossible demand for a high-fineness content. In Mr. Walker's opinion, where considerable amounts of minus-100-mesh sand are desired and specified, it is preferable that such fines be handled separately in designing concrete mixtures and added to the mix as a control procedure.

Reviewing the growth of the commercial ready-mixed-concrete industry since its inception more than two decades ago Mr. Walker convinced his listeners that the industry itself has done more to improve the quality of concrete than has any other agency or organization. The resistance of the consumer in accepting concrete on a strength-specification basis continues to be one of the industry's important problems, he said.

Producing companies of the Los Angeles area and the number of their representatives in attendance included:

(*Continued on page 78*)

# BETTER LUBRICATION *means* BETTER MAINTENANCE



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**Sand Meeting** *(from page 74)*

Arrow Rock Company..... 3
Azusa Rock & Sand Company... 5
S. H. Bacon Materials Company 2
Richard & Ball..... 1
Blue Diamond Corporation..... 5
Chandler's Palos Verdes Sand & Gravel Company ..... 1
Consolidated Rock Products Company .....15
Graham Brothers, Inc.....12
John D. Gregg..... 4
E. Lockett & Son..... 2
Manning Bros. Rock & Sand Company ..... 2
Owl Rock Products Company.... 3
Saticoy Rock Company..... 2
Triangle Rock & Gravel Company ..... 2
Transit Mix Concrete Company.. 3

Guests included C. M. Weber, supervising construction inspector, California Highway Department; O. F. Cooley, road commissioner, Los Angeles County; Frank Gillehen, president of the Los Angeles Board of Public Works; Alfred J. Miller, chief engineer of The Los Angeles Department of Building and Safety; Roderick Chisholm and L. F. Remley, laboratory engineers of the Asphalt and Concrete Sections United States Engineers; Lieut. Paul Evans, laboratory engineer in charge of materials, Eleventh Naval District; W. C. Hanna, chief chemist of the California Portland Cement Company; and Don Gotham, priorities administrator, Riverside Cement Company.

Arrangements for the dinner were capably executed by H. F. Ferand, executive secretary of the Los Angeles producers' group.

The Sacramento meeting on November 3 was conducted under the chairmanship of E. J. Goodpastor, general manager of Pacific Coast Aggregates, Inc., who introduced Robert Mitchell, president of the Consolidated Rock Products Company and of the National Sand & Gravel Association, who acted as master of ceremonies. C. H. Purcell, director of public works of California, gave an encouraging address, followed by a talk by G. T. McCoy, state highway engineer. T. E. Stanton, laboratory engineer of the State Highway Department, expressed the desire of his department to coöperate with other authorities on the question of simplified practice in the matter of aggregate specifications. Colonel Alexander R. Heron, director, State Reconstruction and Reemployment commission, told of what his body is doing to prepare the way for an early start on reconstruction work.

Stanton Walker, director of engineering, National Sand & Gravel Association, discussed the overlapping of specifications. F. M. Hveem of the state highway laboratory then showed and explained stereopticon slides prepared by his department to portray the gradings required by California specifications.

It was decided at this meeting that committees of producers from both the northern and southern parts of California should be formed to work jointly with committees of engineers of the various government authorities in an attempt to find the answer to the problem of reducing the large number of sizes of aggregates now being produced in order to meet the greatly varying specifications of the various engineering bodies.

Participating in the meeting were 34 representatives of aggregate-producing companies, 4 representatives of trade associations, 17 representatives of state government agencies, 2 representatives of federal government agencies and representatives of the cities of Los Angeles and Oakland.

## Soldiers Get Actual Training in Quarrying

Soldiers are getting actual experience in the operation of a quarry at Camp Ellis, Illinois. Last spring, a natural glacial deposit was discovered near the camp and the government decided to lease the land on a tonnage basis, thereby giving GIs training in stone quarry operation.

At the same time the crushed rock is used to improve the roads in camp and to build new ones. Last spring the land was surveyed and drilled—to determine the extent of the rock bed. It was discovered that stone existed anywhere from eight feet of solid rock to several hundred feet with layers of sand, gravel and hard clay in between.

Machinery recently was transported to the quarry. Capt. Wayne M. Stanly, a graduate of Colorado School of Mines, was given the task of operating the project and 150 soldiers were provided. A civilian supervisor and master mechanic, Hugh Tiff, was called in from the Corps of Engineers Division, Chicago, to lend his 12 years experience, most of which was acquired with Material Service Corporation, Chicago.


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**Worthington Pump and Machinery Corp.**

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WORTH BEHIND THE MAN WORTHINGTON

Worthington Pump and Machinery Corporation Harrison, N. J. Holyoke Compressor and Air Tool Department Holyoke, Massachusetts

**Columbia Quarry** *(from page 74*

exchanger. The raw water from a pond near the plant is pumped through a Scaife water softener before entering the cooling circuit.

The pulverizing plant will eventually consume the full output of the new generating equipment, for it is the intention to increase the horsepower of the drive motors on two of the pulverizers. The new American ACS-3 pulverizer installed this summer has a 250-horsepower motor, whereas the original ACS-3 in the plant is driven by a 150-horsepower motor. It is planned to replace the latter as soon as possible with a 200-horsepower motor and to install the 150-horsepower unit on the American 30.40 pulverizer which at present has a 75-horsepower motor. This step-up of motor sizes was suggested by the discovery that the new pulverizer was producing about as much agstone as the other two machines combined. At present the pulverizing plant is producing 120 tons per hour, but it seems highly probable that with the larger motors production will increase to 150 or 160 tons per hour.

The Diesel-engine generating plant at the Krause plant is unquestionably one of the most modern and complete installations to be found in the crushed-stone industry. In the eight years that have elapsed since the first engines were installed, the considerable investment involved in the management's original decision in favor of plant power generation has proved entirely sound. The resulting satisfaction has been well-evidenced by the two subsequent installations to increase the generating capacity in accordance with the needs of the crushing plant. Although the point is a difficult one to document, there is undoubtedly a close relationship between the availability of controlled, low-cost power and over-all plant growth. Inevitably more and more alert managements will follow the example of the Columbia Quarry Company in creating the conditions vital to the growth of their operations when such conditions are not afforded by the power companies.

## Veteran Re-employment

A war veteran returning to his job is to be "reemployed at the level to which he would have been entitled if there had been no break in his service with the company," according to the National War Labor Board's interpretation of the Selective Training and Service Act of 1940, it was announced November 16. The board's interpretation was stated by its general counsel, Jesse Freidin, in reply to a letter from R. W. Finlay, director, Labor Negotiating Service, Division of Safeway Stores, Inc., San Francisco. Mr. Finlay inquired whether a returned veteran reemployed by his original employer should be moved forward to the point in an automatic length-of-service schedule of rates to which he would be entitled to if he had been continually employed during the period of his service with the armed forces.

"The Selective Training and Service Act of 1940 guarantees reemployment to a veteran in a position of like seniority, status, and pay," Mr. Freidin replied in his letter. "This has been interpreted as requiring such a veteran to be reemployed at the level to which he would have been entitled if there had been no break in his service with the company. The returned veteran is therefore entitled to any length-of-service increase which the job would have carried with it during his absence in the armed services."

● Your country is still at war, —are you?

## Mutual Problems Discussed by Stone Producers

Under the auspices of the National Crushed Stone Association some 40-odd midwestern crushed stone producers met recently in the Palmer House, Chicago, to discuss their mutual problems. Paul M. Nauman, midwestern regional vice-president, presided at the day-long meeting which included a luncheon at which the producers and others present were the guests of the National Crushed Stone Association.

A. T. Goldbeck, director of the association's bureau of engineering, described some of the engineering and research problems that are currently receiving attention in the association's laboratory. Studies are in progress, Mr. Goldbeck said, to determine the proper gradation and shape of stone sand, and the effect of air-entraining cement when stone sand is used in place of natural sand. He described in some detail the laboratory's circular track arrangement for testing bituminous mixes under wheel load, the investigation of railroad ballasts which have failed to reveal any particular relationship between gradation and stability, and the use of stone screenings as a granular base-course under airport runways.

Mr. Goldbeck distributed the first issue of a new association publication called Stone Briefs, in which a wide range of condensed technical information will be made available to crushed stone producers. The first pamphlet in the new series describes a method of proportioning workable concrete for any desired compressive strength.

E. W. Bauman, field engineer for the association, asked for an open discussion concerning the advisability of forming regional committees under the regional vice-presidents in order that the services of the association might be more effective throughout the industry. With one member representing each state, such regional committees would, Mr. Bauman said, constitute an excellent medium through which problems of the industry could be brought to the attention of the association's staff. The ensuing discussion indicated that most of those present were in accord with the suggestion, and Mr. Nauman, as midwestern regional vice-president, asked that producers in each state select someone in their group to serve on the regional committee.

Following the luncheon, J. R. Boyd, administrative director of the association, discussed some of the post-war problems of the crushed stone industry. In connection with the re-employment of veterans, he disclosed that 1,500,000 men have already been discharged from the armed forces, and that within the first year following the end of the war in Europe as many as 6,000,000 may be released. Mr. Boyd pointed out some of the perplexing problems that will arise in connection with the re-employment of war veterans, and he expressed the hope that by intelligent, capable handling of these and other post-war problems industry might succeed in staying out of the "dog house" from which it has so recently emerged.

## Robins Appointments

At a recent meeting of the board of directors of Robins Conveyors, Incorporated, Passaic, New Jersey, three new appointments were announced. Harold E. Murken becomes controller, John T. Hoyt, treasurer, and T. Webster Matchett, secretary.

Harold E. Murken, a graduate of Pace Institute, New York, joined the company early in 1927, working his way through various accounting and administrative departments to his present position.

T. W. Matchett came to Robins in 1933. He is a graduate of Lehigh University, with a degree of Mechanical Engineer. From the shop, where he worked in different departments to familiarize himself with their functions, he went to the sales department. Now, he is in charge of coordinating production, and a member of both the executive committee and the board of directors.

John T. Howy joined the company in 1942 as controller. For many years he was engaged in the manufacture and sales of industrial equipment, as well as in process engineering work in such industries as mining, metallurgy, chemical, cement, blast furnace and others.

## Elected Chairman

S. M. RUST, retiring president of The Rust Engineering Co., has been elected chairman of the company's board of directors; and S. M. Rust, Jr., who has been serving as executive vice-president, has been elected president of the company, the board of directors announces.

Mr. Rust, Sr., founded the company in 1905 with his brothers, E. M. Rust and the late E. J. Lee Rust, engaging in engineering design and construction of complete industrial plants and facilities. The company maintains offices at Pittsburgh, Pa., Birmingham, Ala., Washington, D. C., and New York, N. Y.

Mr. Rust, Jr., entered the organization after graduation from Lehigh University in mechanical engineering, working in the field and in various other capacities before becoming vice president.

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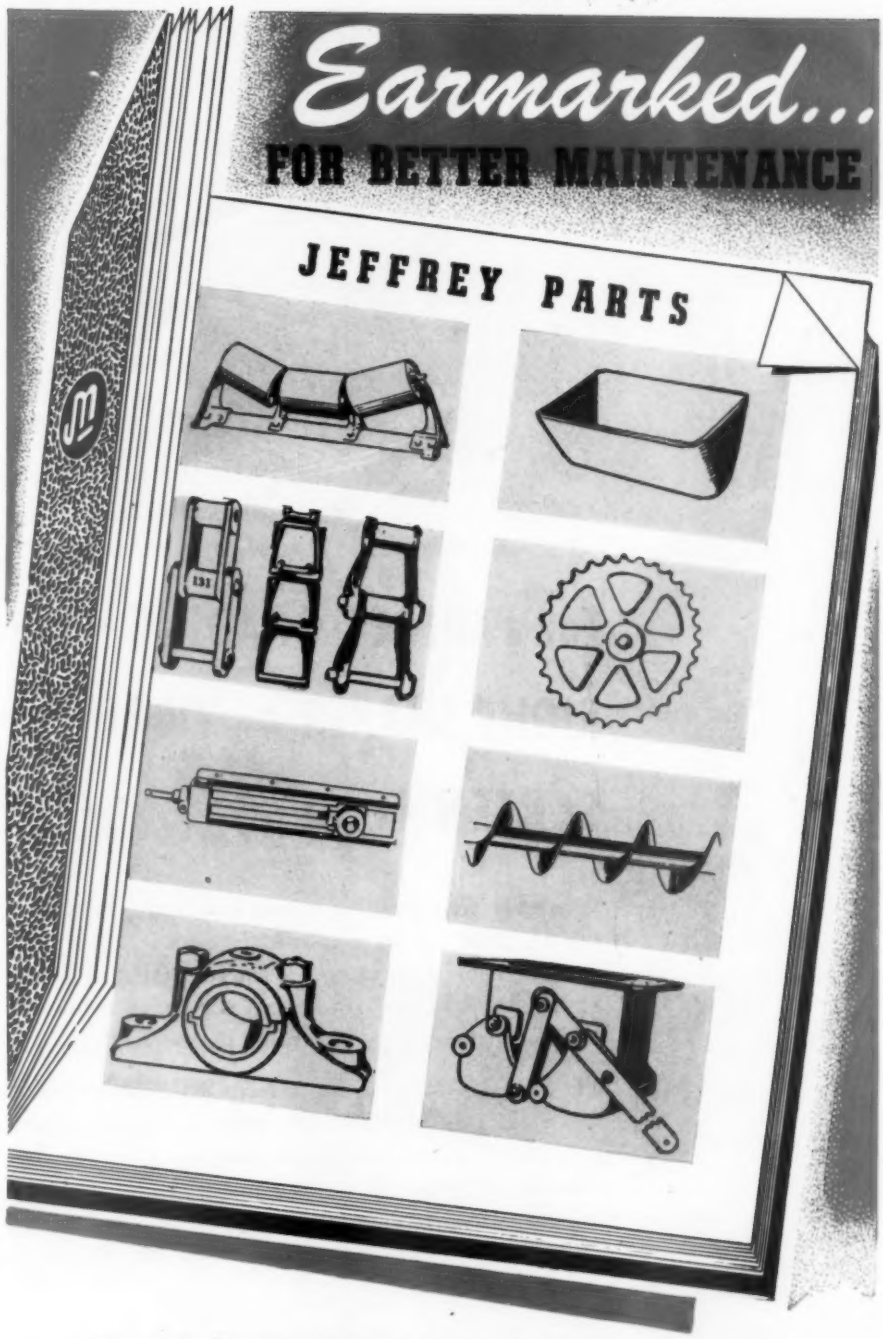
E. R. DURFEE, formerly assistant secretary, has been appointed secretary-treasurer of the Monolith Portland Cement Company and the Monolith Portland Midwest Company, both of Los Angeles. He succeeds J. J. Calkins who died recently.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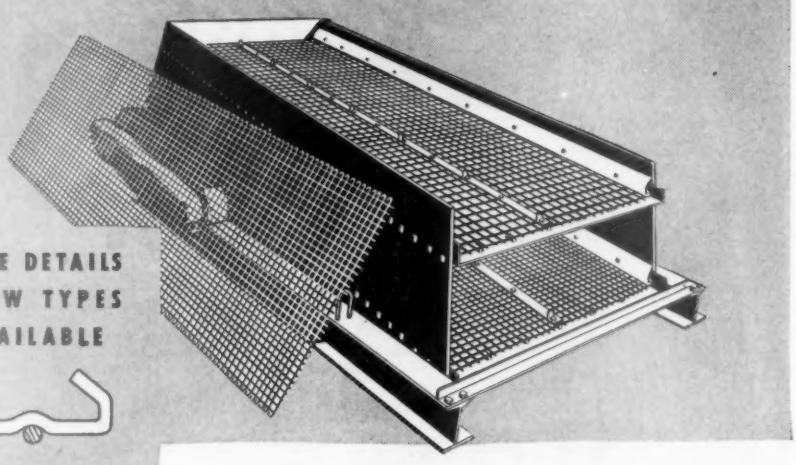
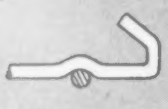
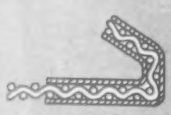


EDGE DETAILS SHOW TYPES AVAILABLE



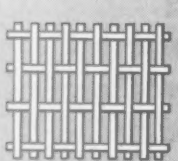
Type 1: Turned Edge. (illustrated above).

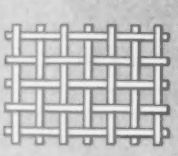
Type 2: Metal Reinforced Edge.



Type 3: DoubleMetal Reinforced Edge.

Type 4: Square Bar.





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Top: rectangular mesh.

Lower: square mesh.

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# PERSONAL MENTION

ARLEY PHILLIPS, manager of the Phillips Stone Company, Boonville, Indiana, reports that the company's quarry near Boonville, is being operated steadily and the demand for stone has been good. The company sells a great deal of crushed stone to Warrick county for the improvement of county roads. Lowell T. Phillips, cashier of the National Bank at Tennyson, Ind., is the president of the company.

HAROLD F. ALLEN was recently appointed chief engineer for the Link-Belt Speeder Corporation. He will divide his time between the Chicago and Cedar Rapid plants. Mr. Allen is a graduate of Columbia University, and later taught mechanical engineering there. At the time he joined the Link-Belt organization in 1915, he was engaged in experimental work at the university; and he has since contributed many sound ideas for the improvement in the operation of crane and shovel equipment.

SPERRY L. SEARLES, for the past 25 years connected with the automotive field in and around Cleveland, was recently elected president of the H. B. Fuller Equipment Company of that city. Since 1936 this company has been distributor in northern Ohio territory of industrial electric lift trucks, quarry cars, truck bodies and semi-trailers.

Harry J. Quirk

HARRY J. QUIRK has accepted a position as sales engineer with the Kent Machine Company of Cuyahoga Falls, Ohio, manufacturer of a line of concrete products machinery and a variety of special tools. He will have charge of the engineering and sales for both departments. Due to his mechanical training and experience, plus his technical knowledge of the concrete products industry, Mr. Quirk is well qualified for his new responsibilities.

ALBERT E. BUYERS, JR., vice president and secretary of the Buyers Gravel Corporation and the Buyers Excavating Contract Company, Buffalo, has been promoted from first lieutenant to captain in the U. S. armed forces.

## Discuss Problems of Industry at DEMA Meet

Robert E. Friend

A round table discussion of problems facing the industry is the pattern around which the annual meeting of Diesel Engine Manufacturers Association will be built. The meeting is to be held December 6 in Cleveland, Ohio.

It will be strictly a business session, according to Robert E. Friend, president of the association and head of Nordberg Mfg. Co., Milwaukee. The Diesel engine makers will air the issues that confront them now and which will arise at the end of the war.

A new activity of the association —that of watching state legislation that may affect Diesel engine interests, will be discussed by Harvey T. Hill, DEMA's executive director. Committees on public relations, traffic, insurance and education will report their progress.

At a dinner in the evening the association will elect nine directors to serve through 1945, Mr. Friend said.

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PAUL R. EHRGOTT has been appointed general sales manager of the shovel and crane division, in charge of domestic and export sales of the Lima Locomotive Works, Incorporated, Lima, Ohio. Mr. Ehrgott, formerly district sales manager of the eastern Pennsylvania territory with headquarters at Bethlehem, Pennsylvania, will assume his new duties November 1, 1944.

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CHARLES F. HALL, formerly president of the Acme Equipment Company, Allison Park, Pennsylvania, has opened offices at 614 Bessemer Building, Pittsburgh. He will handle a complete line of industrial contractors' and mining equipment, both new and used.

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COLONEL BRADLEY DEWEY, president of the Dewey and Almy Chemical Company, Cambridge, Massachusetts, was awarded The Chemical Industries Medal from the American section of the Society of Chemical Industries, at a meeting which was held at the Hotel Roosevelt, New York, on November 10. The honor was conferred upon Colonel Dewey for valuable application of chemical research to industry.


# The Next Best Thing *to* *Manganese Steel*

In ordinary times the owner of crawler-type tractors gets such long original life from manganese steel parts that "building up" to compensate for wear is an infrequent necessity. It *is* done, and economically too, but these examples of conservation welding with Amsco materials relate to carbon steel castings.

W-103 shows a driving sprocket after hard-surfacing the teeth for the third time with Amsco Economy Hardface. The total cost was $25.00 and the welded sprockets gave wear equal to that of new ones. No grinding was necessary, the track being full-floating so that when the original contour is restored, rolling friction rather than sliding friction occurs.

W-104 shows how round mild steel bars may be applied to badly worn tractor sprockets. The teeth wear thin and then spall off, causing the track to jump over them. By welding on a common reinforcing bar across the edges of the teeth and then applying Economy Hardface, these sprockets are reclaimed for one-third the cost of new ones.

W-103B, two crawler sprockets which were put into service at the same time are shown. The one on the left had been rebuilt with 1/4" Economy Hardface electrodes, and the one on the right was a brand new sprocket. The new one had worn to such an extent that it was necessary to resurface it with Economy Hardface, while the welded sprocket needed no repairs.

Ask for Bulletin 941-W on Amsco Welding Products and their applications.

**The features of Amsco Renewable Lip Dippers are covered in Bulletin 641-D.**

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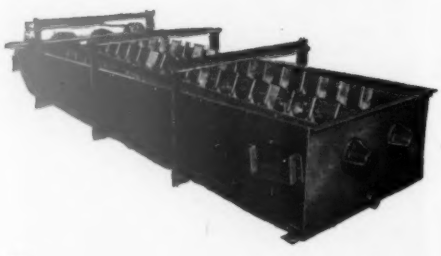

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"SERVING INDUSTRY FOR OVER SEVENTY YEARS"


## OBITUARIES

HARRY H. GROBMYER, 62 years old, treasurer and general manager of the Carrollton Coal & Sand Company, Carrollton, Kentucky, passed away recently. Interment was at Effingham, Illinois.

WILLIAM WINTER, 87, died recently at the Holland home, Muskegon, Michigan, following an illness of one month. A community and business leader for several decades, he established the first cement block factory there in 1903. This enterprise continued until 1915 when he retired due to ill health. Surviving him are one son and one granddaughter.

MARTIN W. GOFFINET, age 23 years, died on November 1 at Parkview Hospital, Tell City, Indiana, of injuries suffered from falling stone in the Ed Lutgring & Sons Stone Company quarry at Branchville.

JUDGE BERNARD MASON, 75, Pearisburg, Virginia, died there recently. A graduate of the University of Virginia, he practiced law successfully for a number of years, but in recent years he devoted the major portion of his time to business interests. He was president and founder of a home building corporation, two lumber companies, all in West Virginia; and he was head of the Ripplemead Lime Company of Ripplemead, Virginia. He is survived by his wife, three daughters, and two sons, D. W. Mason of Narrows and George E. Mason of Blacksburg, Virginia. Both of them are actively engaged in the lime and lumber business.

B. J. LATIMER, who resigned his position as superintendent of the Three Forks Portland Cement Company, Trident, Montana, in 1943 because of ill health, passed away recently in Glendale, California.

ALBERT A. KREEB, 27, district manager of the U. S. Gypsum Company of Owensboro, Ky., died recently in St. Elizabeth Hospital, Covington. Besides his parents he leaves three sisters and a brother.

FRED TOD, chairman of the board of directors, Bessemer Limestone and Cement Company, passed away Saturday, July 29.

DAVID WAXMAN, manager of the asphalt sales department of the Shell Oil Company and a director and former chairman of the executive committee of The Asphalt Institute, died August 29, in the White Plains Hospital at the age of 46.

# Legal Decisions

### Employee's Release Held Void

A modern higher court held that an employer can not avoid paying wages specified by the Fair Labor Standards Act. The fact that an employee signs a contract agreeing to release his employer from legal wage payments is void.

For example, in *Cudahy v. Bazanos,* 15 So. (2d) 720, reported January, 1944, the higher court held that the benefits of the Fair Labor Standards Act are limited to employees engaged in commerce or in the production of goods for commerce, and does not extend to businesses or transactions which merely affect interstate commerce. On the other hand, this court held an employer liable for $2,205 for failure to pay an employee wages specified by the Fair Labor Standards Act. In this important case the duties of the employee consisted of clerical work, of checking and reporting merchandise lost or damaged during shipment by his employer to customers in other states. In order to safeguard himself against future suits the employer had the employee sign a contract by the terms of which the employee agreed to work for $30 per week with no extra pay for any part of the time he worked. Notwithstanding this agreement the higher court held the employee entitled to a full recovery for overtime, back wages, etc. This court said:

"We think that 'movement in commerce' can well include among its final phases the clerical work of checking and reporting for goods lost or damaged in transit between the states and the entries in the stock book of goods received in the interstate shipments. . . A release of claims is no defense to an action under the Fair Labor Standards Act."

This court explained further that it is obvious that a desire to continue in employment on the part of an employee would make it easy for an employer, who wished to ignore the Fair Labor Standards Act's provisions to induce him to execute a release of claims under the provisions of the law. The court said that unless such agreements as this be declared void, it would be easy to circumvent the declared purpose of the Congress.


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. . . that takes an AMERICAN Crusher!

Record capacities of a highly uniform material, produced continuously at the lowest operating cost, prove that an "AMERICAN" is handling the toughest stone crushing job.

*There's no question* that "AMERICANS" lead the field for all-purpose performance.

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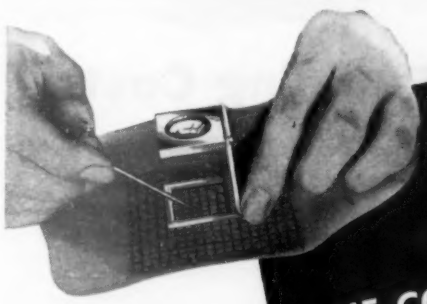
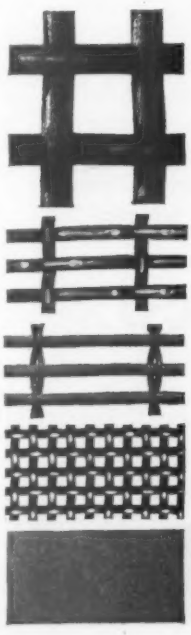
**AMERICAN PULVERIZER CO., 1059 Macklind Ave., ST. LOUIS 10, MO.**



## How to make certain that you're getting THE CORRECT WIRE CLOTH



There are too many mesh sizes, wire gauges, weaves and metals in use that are *nearly* right . . . and "nearly right" is often a long way from top efficiency and long life.

Wire cloth can and should be fabricated to meet requirements accurately and precisely. There are specific formulae for determining your needs for a particular operation or service. Likewise there are specific metals to resist conditions of wear, abrasion, corrosion and high temperature.

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You can pump more water at less cost per gallon with a Carver Pump because it stays on the job longer at top performance. Trouble-proof design, lifetime, tungsten carbide seal, special, long-life impeller and removable liner mean less time out for repairs and maintenance. The recirculation tube is scientifically designed to provide fastest priming, peak efficiency, and correct amount of recirculation to keep priming chamber free from clogging deposits of silt, sand or dirt.

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**THE CARVER PUMP CO.**
**Muscatine, Iowa**

CARVER CENTRIFUGAL
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## Questions and Answers

[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]

*Legal Editor:* We contracted to deliver a stated and definite quantity of marble at a stipulated price. However, no date was specified for delivery except that we agreed to make shipments when ordered out by the purchaser. How long can the purchaser drag out these deliveries in the face of advancing prices?—A. C.

*Answer:* Frequently, contracts of sale fail to specify dates for the delivery of purchased merchandise. Under these circumstances the contract is indefinite but valid, provided the purchaser orders delivery of the goods within a "reasonable" period of time. In other words, where no time is expressly provided for the delivery of merchandise, the law requires that the delivery must be made within a reasonable time.

For example, in *Salt Lake v. Colorado Company,* 140 Pac. (2d) 344, reported September, 1943, it was shown that a buyer and seller entered into a written contract whereby the former purchased several carloads of merchandise. He made a down payment of $250 and agreed to pay for the remainder "as ordered out." This contract was signed August, 1940. On November 23, 1940, December 19, 1940, January 28, 1941 and June 23, 1941, the purchaser ordered and received from the seller certain deliveries. On June 30, 1941, the seller notified the buyer that he would not deliver any more merchandise at the contract price. The purchaser sued the seller to recover $1,250. However, the higher court refused to hold in favor of the purchaser and explained that he had delayed too long, after making the contract, in ordering out the merchandise specified in the contract.

According to this decision a "reasonable" time for ordering out purchased merchandise is less than one year, although in the meantime the purchaser orders out a portion of the goods specified in the contract.

*Legal Editor:* Please explain the law relating to "legal fixtures." When can a renter take from property, buildings, equipment, etc. when the lease expires? We are in sand-and-gravel business and our lease expires soon.—E. C. S.

*Answer:* Generally speaking, a company who owns personal property or chattels may remove them

from a building or grounds provided such equipment is *not permanently* attached to the building or grounds. Therefore, when determining whether an item is a "trade fixture" three things must be considered, namely: first, the method of annexation to the building; second, the adaptation of the building to which it is connected; and, third, the intention of the parties to make the article a permanent part of or addition to the building.

Therefore, any apparatus or equipment which is permanently affixed to a building or real property in such a manner that its removal will result in important damage or injury to the building or property is termed a "trade fixture." However, any device which may be removed without material damage to the building is known as personal property and may be removed from the structure by any person who has legal title thereto.

For instance, in the late leading case of *Improvement Company v. Blanchard,* 50 F. (2d) 737, a litigation developed over the question of whether or not a large electric sign should be termed a trade fixture or personal property. In holding the sign to be personal property, which entitled the lessee to remove it, the court stated the following important law:

"A tenant may remove from the rented premises, any time during the continuance of his term, anything affixed thereto for purposes of trade, manufacture, or ornament, if the removal can be effected *without* injury to the premises. . ."

See *Ballard v. Theater Company,* 93 Washington 655, where it was shown that equipment was installed in a building by a tenant without any intention of either the landlord or tenant making it a permanent accession to the building. The equipment was attached in a manner so that it could be quickly removed without any material injury or damage to the building, although to do so required the tearing away of certain walls which the tenant could replace. In holding the tenant entitled to remove the equipment from the building, the higher court said:

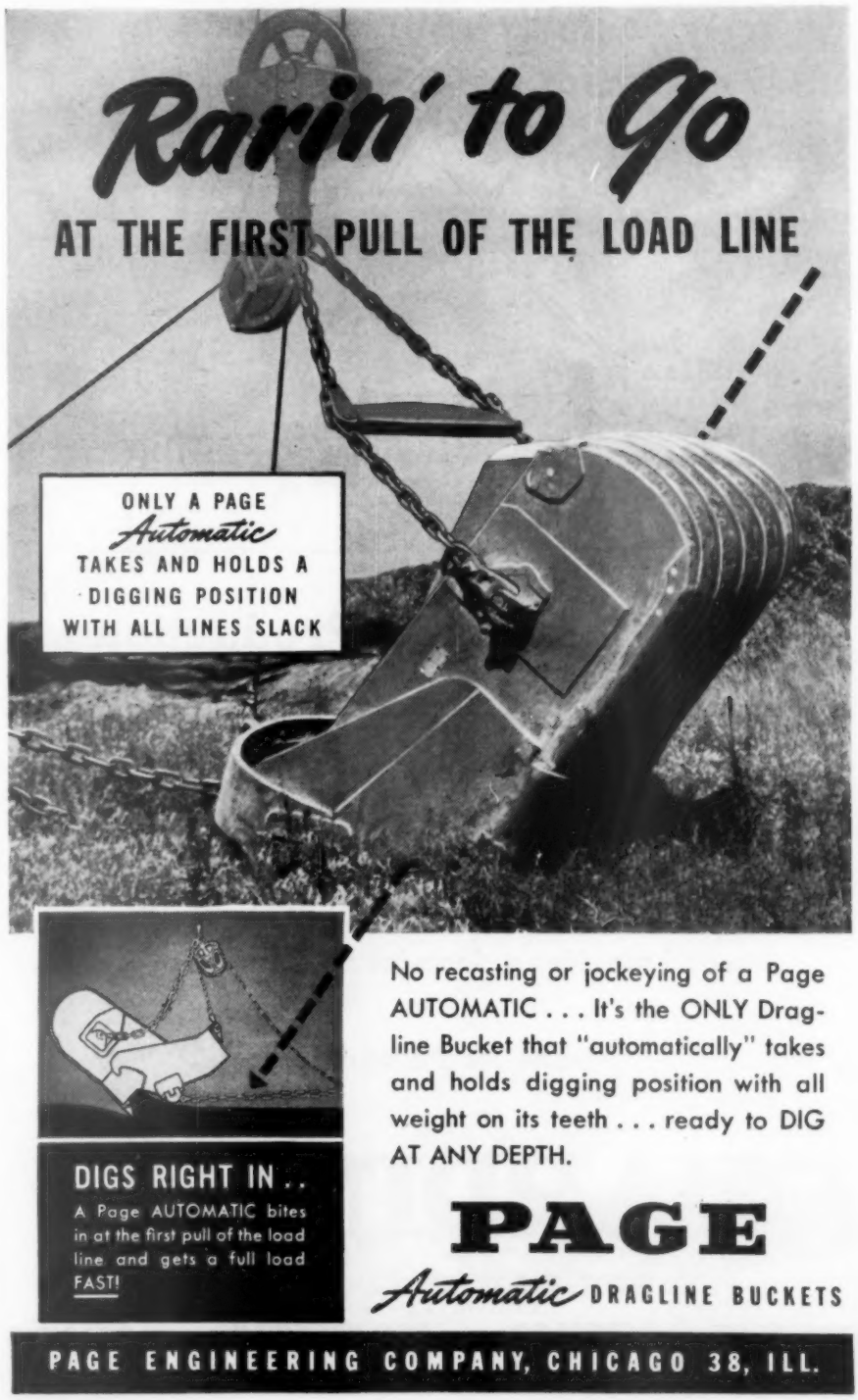
"In determining whether a chattel which has been annexed to the freehold is a trade fixture or a part of the realty, the cardinal inquiry is into the intent of the party making the annexation."

Therefore, under all circumstances when determining whether sand-and-gravel equipment is a trade fixture, and therefore a permanent portion of the building or premises, the important consideration is: Was it intended to be a permanent fixture, and is it attached to the building or premises in such a manner that it can not be removed without *permanent* damage to the building or premises? If so, it is a trade fixture and can not be removed by the tenant.

In *Alwes v. Richheimer,* 47 S. W. (2d) 1084, it was shown that a person attached to a building certain articles such as were needed to operate the business. In holding this person *not* entitled to remove the articles, the court said:

"We think the articles enumerated above are fixtures because, not only are they attached to the building, but are used and are useful in connection with the building."

For variations of the law see the following cases: 169 N. E. 789, pipes not permanently connected to building held personal property; 158 N. E. 343, a furnace held to be personal property; 157 Atl. 670, a refrigeration system held to be a legal trade fixture; 6 Pac. (2d) 952, plumbing, plumbing fixtures, and a heating system held to be a trade fixture; 297 Pac. 66, pipes and fixtures merely connected to a water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AT THE FIRST PULL OF THE LOAD LINE
ONLY A PAGE Automatic TAKES AND HOLDS A DIGGING POSITION WITH ALL LINES SLACK
DIGS RIGHT IN . .
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No recasting or jockeying of a Page AUTOMATIC . . . It's the ONLY Dragline Bucket that "automatically" takes and holds digging position with all weight on its teeth . . . ready to DIG AT ANY DEPTH.
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Automatic DRAGLINE BUCKETS
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supply held to be personal property, 46 Pac. 126, engine connected to premises by bolts held removable.

*Legal Editor:* Please explain the meaning of the term "caveat emptor" generally included in sale contracts. Not being familiar with its meaning I may become involved in litigation through lack of knowledge. Can you give a recent case in which this term was clearly explained.—McH. C.

*Answer:* First, it is important for you to know that *caveat emptor* does *not* mean that the buyer is justified in taking a chance. It means that he must "take care." Generally, this term applies to the purchase of specific things on the quality of which the buyer can and usually does exercise his own judgment. It applies also wherever the buyer voluntarily chooses the thing he is purchasing. In other instances the higher courts have held that it implies that the buyer shall *not* rely on the skill or judgment of the seller. However, it *never* has application in any sale contract *where the buyer has trusted* the seller to supply merchandise to be used for a purpose known to both parties at the time of the sale.

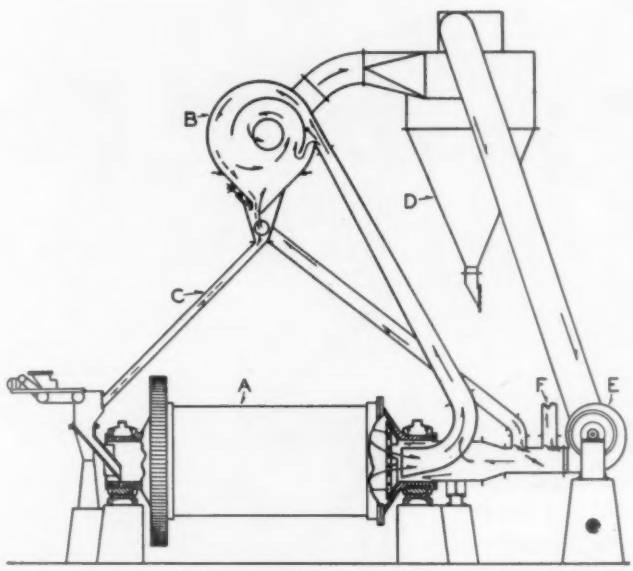
If you relied upon the good judgment of the seller to supply you with merchandise specified in a contract, the term *caveat emptor* is not applicable in your case, and you are not bound by it, although it is included as a term in the contract. However, if you merely ordered the product after examining it, not informing the seller of the uses you intended to make of it, and the seller was not sufficiently acquainted with your business to know what you intended to do with it, you are bound to pay for it irrespective of its poor quality of unfitness for the intended purposes.

A late higher court case on this subject is *Paul v. Salisian,* 262 Pac. 779. In this case it was held that an experienced purchaser who buys merchandise, after thoroughly inspecting it, can not later rescind the contract.

*Legal Editor:* Certain L.C.L. traffic shipments, which are received by us, are subject to freight delivery service. We elect to take the 5 cents per 100 pounds allowance instead of allowing the railroads to make the delivery. We hire a trucking company and our contract with them is on the ton basis with certain fixed minimums as to quantities and time for deliveries. Upon this L.C.L. traffic the transportation tax has already been collected. Are the charges of the trucking company also subject to the transportation tax?—C. C.

*Answer:* According to my interpretation of this tax law the consignees must pay the 3 per cent. transportation tax except on "door-to-door" deliveries. With respect to the latter the tax is paid by the carrier and added to the transportation bill. In all other cases the consignee must pay the carrier who must account to the government for the tax payments it receives from its consignees.

Important points of this transportation tax law, are as follows: A 3 per cent. tax is imposed upon the amount paid for transportation of property by railway, motor vehicle, water, or air from one point in the United States to another, except that the rate of tax on coal is 4 cents per short ton. The tax applies only to amounts paid to a person or company engaged in the business of transporting property for hire, including amounts paid to a freight forwarder, express company, or similar company, but not including amounts paid by a freight forwarder, express company, or similar person for transportation with respect to which a tax has previously been paid.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**The Hardinge Reversed Current air classifier in closed circuit with a tube mill eliminates elevators and provides a clean installation free of dust.**

**Write for Bulletin 18-A**

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**COMPANY, INCORPORATED, YORK, PENNA.**

NEW YORK CHICAGO SAN FRANCISCO TORONTO

This 3 per cent. transportation tax does not apply: (1) to an amount paid outside the United States for the transportation of property from a point without the United States to a point within the United Sates; (2) to an amount paid by a carrier with respect to which a tax is payable to such carrier, freight forwarder, express company, or similar person; (3) to an amount paid by or to the United States or any agency or instrumentality thereof for the transportation of property; (4) to an amount paid by a state, or political subdivision thereof, for the transportation of property; or (5) to an amount paid for the transportation of the property in course of exortation or shipment to a possession of the United States and actually so exported or shipped.

Furthermore, no tax is payable by a person or company which uses its own vehicle to transport its own merchandise to any place or location.

Therefore, if the 5 cents per 100 pounds is not included in the first transportation bill, a 3 per cent. tax must be paid to the trucking company. If a portion only has been paid, then you must pay the trucking company the difference. If the amount paid the first carrier on the L.C.L. traffic is more than 5 cents per 100 pounds, then you should get a refund and pay the tax to the trucking company. If it is not possible to get the refund from the first carrier, it is my opinion that you will not be compelled to pay the tax to the trucking company because if you do so you will be paying double taxation.

# TRAFFIC News Digest

### Central Freight Association

*Docket 76483 (2).*—Stone, crushed; slag, gravel or sand, coated with oil, tar or asphaltum (See Note), in open top equipment, carloads minimum weight 90 per cent. of the marked capacity of the car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Parkersburg, W. Va., to Lost Creek, Jane Lew, W. Va., $1.35; Weston, W. Va., $1.46; Buckhannon, W. Va., $1.57; Grafton, Phillipi, W. Va., $1.46; Belington and Elkins, W. Va., $1.57 per net ton, via B&O R. R. direct, subject to ExParte 148 (suspended).

Note: The oil, tar or asphaltum not to exceed 10 per cent. by weight of the commodity as shipped, the shipper to so certify on shipping orders and bills of lading.

*Docket 76487 (2).*—Limestone, ground or pulverized, unburnt, carload, minimum weight 60,000 pounds. Establish on, from Gibsonburg, Woodville, Maple Grove and other Northwestern Ohio Group 1 origins to points in Michigan, Minnesota, and Wisconsin. (See Exhibit "D") and points taking same rates in Agent Jones' Basing Book 165-F rates as shown in Exhibit "D".

*Docket 76491 (2).*—Sand, as described in Exhibit A attached. Establish on, to McDonald, Pa., following rates in cents per net ton: From so-called Vassar group, viz.: Juniata, McHale, Banksand, Watrousville, Millington, Mich., (B) open cars, 286; (A) closed cars, 286. So-called Paines Group, viz.: Paines and Hemlock, Mich., (B) open cars, 297; (A) closed cars, 297. Daytona (Black Siding), Mich., (B) open cars, 297; (A) closed cars, 297. Rates are subject to ExParte 148 increase which is suspended until January 1, 1945.

*Docket 76492 (2).*—Stone, fluxing, furnace or foundry, melting or refractory, unburnt, in bulk, in open top cars, carload, minimum weight 90 per cent. of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Hillsville, Walford, Shaw Junction, Pa., to Vandergrift, Pa., $1.03 per G. T., subject to ExParte 148 increase (suspended).

*Docket 76499 (1)*—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel. in open top cars, carload, published in B&O RR Trf. H. 3485-B, from Cincinnati to points in Illinois, Indiana, Iowa, Michigan, Missouri, New York, Pennsylvania, West Virginia, etc. account obsolete, classfica-


CLIMBING Quarry Production Needs

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REPLACEMENT PARTS

For DIGGING . . .

ORO Dipper Teeth

For CRUSHING . . .

ORO Renewable Tip Hammers

Quarry operators can set "non-stop" production records by replacing worn machine parts with ORO Supermang . . . a specially tough, easy-welding manganese steel.

ORO parts interchangeable with those help to insure long service, steady production and low-cost operation, because of increased wear resistance.

ORO parts interchangeable with those you are now using are available in many other applications.

KENSINGTON STEEL CO.
506 KENSINGTON AVE. CHICAGO 28, ILL.

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basis to apply in lieu thereot.

*Docket 76503 (2)*—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding, polishing, loam, moulding and silica) and gravel, in open top cars, carload. Establish on, from Riverton, Ind., to Hayne, Lanesville, Hanson and Mechanicsburg, Ill., $1.11 per net ton.

*Docket 76508 (1)*—Sand (bank, river or torpedo) and gravel, carload. Establish on, from Standard Pit, Ind., to Decatur, Ill., and intermediate points, Tuscola to Long Creek, Ill., incl., $1.11 per net ton.

*Docket 76528 (2)*—Sand, all kinds, and gravel, in open top cars, carload. Establish on, from Warren, O., to Youngstown, O., $0.66 per net ton, subject to Ex Parte 148 increase (suspended).

*Docket 76530 (1)*—Limestone, ground or pulverized, unburnt, carload minimum weight 60,000 pounds. Establish on, from Speed, Ind., to Louisville, Ky., $0.72 per net ton.

*Docket 76602 (2)*—Slag (a product of iron or steel blast or open hearth furnaces), including slag, commercial crushed, in open-top equipment carload, minimum weight 90 per cent. of marked capacity of car, except when cars are loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Buffalo, N. Y., to Youngstown, O., $1.54 per net ton.

*Docket 76629 (1)* — Crushed Stone; crushed stone screenings; agricultural limestone, unburnt. (a) Establish on crushed stone and crushed stone screenings, in bulk, in open top cars, carload, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply, from Mitchell, Ind., to certain points in Ind., rates as shown in Exhibit E.

(b) Establish on agricultural limestone, unburnt, in bulk, in open top cars, carload, minimum weight as per Exhibit E, from Mitchell, Ind., to points in Indiana and Illinois, rates as shown in Exhibit E.

*Docket 76646 (1)*—Limestone, agricultural, unburnt, in bulk, in open top cars, carload, minimum weight 90 per cent. of marked capacity of car, but not less than 120,000 pounds. Establish on, from Bedford, Ind., to Linton, Ind., $0.50 per net ton, via C. M. St. P. & P. direct, to expire Dec. 20, 1944.

*Docket 76566 (2)*—Sand (except sand, moulding, bonded (naturally or otherwise) and except ground or pulverized sand) in closed equipment, carload, minimum weight as per G. T. L. W. Trf. 312-T. Re-establish on, from Grand Haven, Muskegon and Muskegon Heights, Mich., to Milwaukee, Wisc., $1.10 per net ton, for application during the coming winter to become effective Nov. 1, 1944, and expire March 31, 1945, subject to ExParte 148 increase (suspended).

*Docket M-4714 (shipper)*—Manganese ore, carload, minimum weight 90 per cent. of marked capacity of car, but in no case less than 90,000 pounds, from Bastian, Va., to Hiwassee, Va., $1.83 per gross ton in lieu of current sixth class rate of $3.40 per gross ton. Reason: Reflects recognized basis and comparable with rates from and to other points.

*Docket 42472 (shipper)* — Stone, crushed; slag, gravel or sand, coated with oil, tar or asphaltum, the oil, tar or asphaltum not to exceed 10 per cent by weight of commodity as shipped, shipper to so certify on shipping orders and bills of lading, minimum weight 90 per cent. of marked capacity of car, etc., from Parkersburg, W. Va., to Lost Creek and Jane Lew, W. Va., $1.24; Weston, Grafton, Phillipi, W. Va., $1.35; Buckhannon, Belington, Elkins, W. Va., $1.46 per net ton, in lieu of present class rates. Reason: Comparable with rates applying from and to other points.

*Docket 42521* (increase) (carriers)—To cancel commodity rates on limestone, furnace or limestone, low silica, limestone, crude or fluxing and foundry, carload, from Bunker Hill, Darkesville and Falling Waters, W. Va., to various Maryland, Ohio, Pennsylvania and West Virginia destinations as published in P.R.R. Tariff, I.C.C. No. 2064 and Agent Curlett's tariff, I.C.C. No. A-758. Reason: Account no present or prospective movement.

*Docket D-11-106*—Cement, plaster or stucco, L. C. L. Between following stations on the Missouri Pacific: (a) Stations Pleasant Hill, Mo., to Little Blue, Mo., Index Nos. 5 to 25 of Mo. Pac. Tariff No. 9940-A, Item 885. (b) Stations Gowdy, Mo., to Minden, Mo., Index Nos. 35 to 450 of Mo. Pac. Tariff 9940-A, Items 890 and 895. (c) Stations Gowdy, Mo., to Minden Mo., Index Nos. 35 to 450 of Mo. Pac. Tariff 9940-A, Items 890 and 895. And—(a) Kansas City, Mo.: also Pleasant Hill, Mo., to Little Blue, Mo., Index Nos. 5 to 25, Mo. Pac. Tariff 9940-A, Item 885. (b) Gowdy, Mo., to Minden, Mo., Index Nos. 35 to 450 of Mo. Pac. Tariff 9940-A, Item 895. (c) Pleasant Hill, Mo., to Little Blue, Mo., Index Nos. 5 to 25 of Mo. Pac. Tariff 9940-A, Item 895. Proposed Cancel the mileage scales presently published in Items 885, 890 and 895 of Mo. Pac. Tariff 9940-A and similar items in other individual lines' tariffs, if any.

Don't Overlook These LOW MAINTENANCE FEATURES
For accurate, high speed grading at lowest cost, specify a Plat-O Vibrating Screen . . . the screen that provides these assurances of low maintenance and long life:
(1) Heavy steel framework and sides are of all-welded construction. (2) Bearings, drive shaft, and even bolts, are oversize. (3) There are only two bearings and neither carries the screen's weight. (4) Oil bath lubrication (no grease) is provided for every moving part and surface. (5) Automatic screen cloth tension prevents whipping and reduces wear. (6) Screen cloth for each deck can be changed independently—reduces down-time for changes.
These and many more profitable features of Plat-O Screens are described fully in Bulletin 27-A. Write for your copy.
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*Docket E-41-657*—Limestone, crushed or ground, carload, from Prairie du Rocher and Valmeyer, Ill., to Stacyville, Mona and St. Benedict, Ia. Proposed—From Valmeyer, Ill., $3.35 per net ton; from Prairie du Rocher, Ill., $3.40 per ton.

*Docket E-41-658*—Limestone, crushed or ground, carload, from Valmeyer and Prairie du Rocher, Ill., to Winterset, Mt. Zion, Keosauqua, Ledyard, Polk City, Argyle, Anthon, Laurel, Lynnville, Rembrandt, Worthington and New Boston, Ia. Proposed—Same basis as employed in arriving at rates to other points in Iowa.

*Docket 76652 (1)*.—Stone, crushed, slag and/,or, gravel, coated with oil, tar or asphaltum. Cancel rates on, from Indianapolis, Ind., to points in Indiana, published in N. Y. C. & St. L. R.R. Trf. GFD 584-J, and other individual lines' tariffs, account obsolete; classification basis to apply.

*Docket 76656 (1)*.—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding, or silica), and gravel, in open-top cars, carloads, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Addyston, O., to Aurora, Ind., 60 cents per net ton.

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## Fourth Award

For the fourth time, the Army-Navy Production Award has been made to Barber-Greene Company, manufacturers of ditchers, bucket loaders, asphalt mixers and finishers, and other construction equipment for the armed forces and lend-lease agencies. In making the award, Robert P. Patterson, Under Secretary of War, stated in a letter: "By maintaining the distinguished record which brought you distinction, you are once again proving your leadership on the production front."

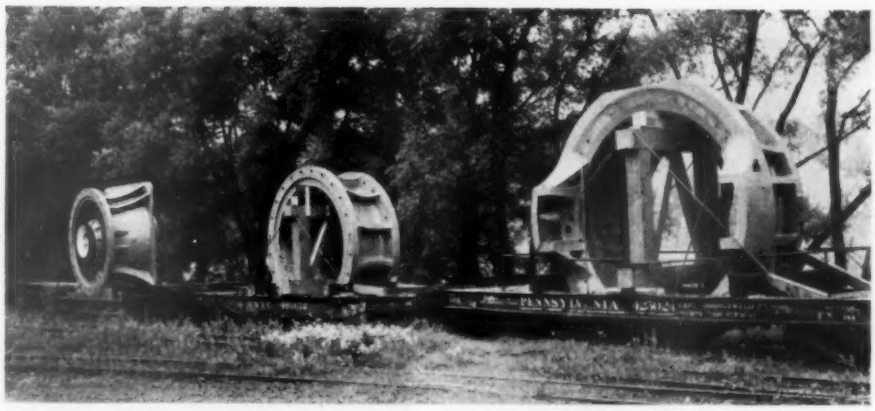
---

## Export Director

D. H. Young, 120 Broadway, New York, was recently appointed director of exports for the Universal Engineering Corporation, Cedar Rapids, Iowa. The company manufactures portable and stationary rock and ore crushing, pulverizing, screening, conveying and storage machinery; gravel washing and screening plants and portable asphalt mixing plants.

Mr. Young will appoint dealers in countries throughout the world with the exception of Russia, Canada, Mexico, Hawaii and the Philippines, where existing distributors will continue to serve the Universal Engineering Corporation.

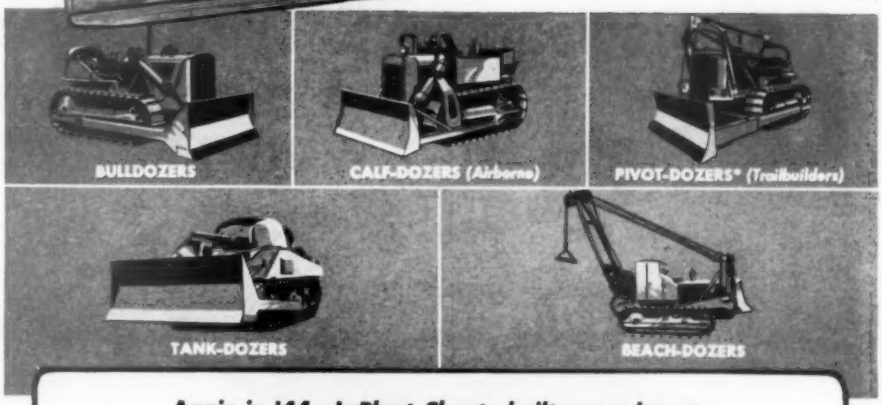
● Your country is still at war, — are you?



Illustrated above are three Meehanite shell castings for 54-inch gyratory crushers manufactured by the Traylor Engineering & Mfg. Company, Allentown, Pennsylvania, for shipment to South America. When completed the crushers will stand nearly 20 feet high. Each of these crushers has a total shipping weight of 620,000 pounds.

"BULLDOZERS COME FIRST"—Just released by McGraw-Hill, this new 278-page book dramatically illustrates the prime importance of bulldozers and other construction equipment in winning the war against the Axis. Written by five of the country's ablest war correspondent editors, it's packed with facts and pictures gleaned from all the major battle areas.

....And
LA PLANT-CHOATE
Comes first
IN BULLDOZERS!




**Again in '44—LaPlant-Choate built more dozers for essential needs than any other company**

While detailed figures cannot be revealed because of military censorship, 1944 was *the biggest production year in dozer history*. Moreover, again this year LaPlant-Choate built more dozers for the armed forces and essential civilian users than any other company in the industry. In addition to thousands of cable and hydraulic operated bulldozers and Pivot-dozers*, LaPlant-Choate developed and built hundreds of highly specialized engineer units—including the now famous Tank-dozer, the Beach-dozer and the small airborne Calf-dozer. This record-breaking production, plus LaPlant-Choate's *21 years of "know-how" in dozer engineering is your* best assurance of tomorrow's best buys in dozer equipment. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa.

*Trade-mark applied for

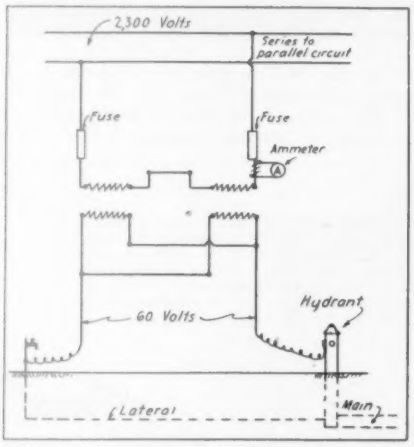
Note the three stars—LaPlant-Choate is one of the few companies in the construction equipment industry to have won the Army-Navy "E" award of merit—four times in a row.

LaPLANT-CHOATE
America's Oldest and Largest Manufacturers of Dozers

### The Electrical Method for Thawing Pipes

The thawing of frozen water lines can be accomplished with little expense and delay by the electrical method wherever power is available.

Since practically all power users have high-tension service about the plant, the accompanying diagram has been developed to utilize 2,300-volt primary current. Two single-phase transformers are used with their primaries connected in series across a single-phase primary and the secondaries are connected in parallel to produce 60 volts. For 120 volts on the secondary the primaries are connected in parallel. Ordinary standard transformers can be safely used, even though overloaded 50 to 75 per cent. since the service is intermittent in nature and the low atmospheric temperatures prevailing during the thawing operations tend to keep the transformers at safe operating values. The ammeter is essential to check on the load requirements of the circuit and to assist in determining the proper size fuses for the primary leads. Attention must be given the method by which the electrical circuit is attached to pipe lines since loose or dirty connections tend to heat severely and may cause a fire. High-resistance connections also tend to lengthen the time required to heat the line to the point where water will flow. Any water meters in the line should either be removed or shunted around by ample current-carrying devices to protect them against heating. All faucets and other openings should be free to discharge the water as readily as possible. Failure to do so may result in ruptured piping due to steam pressures developed.





All Roads lead to Economy with

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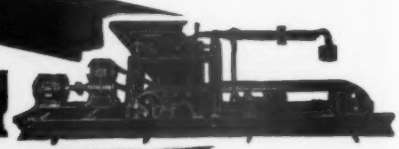
For FEEDING

For PROPORTIONING



SCHAFFER Poidometers for proportioning raw and finished materials will keep you on the road to production profits.

Poidometers are standard for precision weighing equipment in modern plants, and they insure faster operation, greater product uniformity, and lower operating costs.

Write for Catalog No. 5

Poidometers can be furnished with recording devices for registering total tonnage handled. Also with remote controls for indicating rate of feed, total amount delivered, and for changing rate of feed.

SCHAFFER POIDOMETER CO., 2828 Smallman Ave., Pittsburgh 22, Pa.


# NEW MACHINERY and SUPPLIES

### ● Portable Searchlight

"Big Beam" No. 411 portable electric hand searchlight, made by U-C Lite Manufacturing Company, Chicago, will project an intense beam of more than 2,500 feet or, by means of a snap-on lens, give the same volume of light over a wide area. Powered by a heavy-duty, shockproof 6 volt storage battery, rechargeable from any A.C. charger, D.C. line or light plant. Recharging is simple, clean and safe and it is not necessary to remove battery from container. Lamp head can be turned in any direction and stays adjusted. Perfectly balanced for carrying, either by hand or with shoulder-strap. Can be set almost anywhere, and by use of a hold-down can be securely anchored to any flat surface.

Portable searchlight.

### ● All-Weather Treads

A new tread design for truck tires of synthetic rubber which is said to retard the growth of tread cracks and reduce the running temperatures of the tires by as much as 50 degrees has been announced by the Goodyear Tire & Rubber Company.

Goodyear engineers described the new tread design as "revolutionary" because, they said, "it was developed especially to meet synthetic rubber's peculiarities rather than a new attempt to adapt methods used in the tread designs of natural-rubber tires." The new design is serving as a running mate to the company's standard All-Weather tread.

In Goodyear's new "Hi-Miler S Rib" tread, as it has been designated, retarding of crack growth is accomplished by altering the conventional, continuous tread ribs to include terminals at approximately every half inch in the crevice between the ribs. It is in these crevices that damaging breaks or cracks usually originate.

Reduction of the heat is accomplished by a completely ventilated shoulder on each tire instead of the conventional unbroken rib-type shoulder. Laboratory tests have shown that the new type of shoulder will reduce maximum running temperatures in truck tires by as much as 50 degrees under certain circumstances.

The same attributes of the unbroken circumferential ribs are maintained in this new "Hi-Miler S Rib" tread. Despite the apparently jagged or wavy nature of the ribs, according to Goodyear, the ribs are still continuous.

## ● New Face Shields

The new "Hundred" series of face shields, designed about the primary motive of comfort for the wearer, has been announced by the Boyer-Campbell Company, Detroit. There is a choice of three different thicknesses and three different sizes of cellulose acetate general purpose windows . . . three different sizes of 24-mesh screen windows for heat protection

Face shield.

and a fiber front for scarfing and welding. The back head band is worn low on the head and is completely adjustable for snug fitting to any size of head in either elastic or all-fiber head band types. The weight of these shields is evenly distributed over the entire head gear with the result that there is no sense of burden or unbalance.

## ● Barrel Lifter

A simple appliance for up-ending filled steel drums has been devised by Alvin H. Potter of the Du Pont Company, Wilmington Delaware.

The appliance fits over the metal runners of a Colson-type barrel truck, requiring only a few seconds to fix in position. Alterations can easily be made to adapt it to other types of hand trucks. The Up-Ender can be made from supplies usually to be found in a plant repair or machine shop. Cost of labor and materials amounts to about $15 per unit. One man employing the device can easily tip on end a 650-pound drum from a horizontal position and two men can easily up-end a 900-pound drum. It consists of two 12-inch lengths of 1½-inch steel pipes reinforced with a welded curved metal strip, cross braced with each other and notched at the ends to slide around the axle as the device is slipped over the drum runners.

The ends of the lift pipes are flattened out to a rectangular shape so as to fit over the truck runners. The opposite ends of the pipe—the free ends, which

Barrel lifter.

come in contact with the side of the drum—are similarly shaped but at an approximate 45 degree angle in order to conform to the contour of the drum. A solid steel bar, with a ½-⅜" lip leveled off, is welded to the extremity of the pipe, to afford a better grip to the drum chime.

## ● New Welding Alloys

The Eutectic Welding Alloys Company, New York, announces that it has two silver-copper and one copper alloy for tipping tungsten carbide and high speed steel tools now available in a fine powder. The required flux is mixed right in with the powdered alloy which eliminates any waste of flux during preparation and the powder does not require the special handling necessary for cutting the foil into small pieces for exact preplacing.

These alloys are the product of the Eutectic Welding Alloys Company. They are known as

EutecRod 1800 (lowest melting) for H. S. S. 940°-1140° F.

EutecRod 1601 (high tensile) for Tungsten Carbide 1020°-1250° F.

EutecRod 16 (heat resistant, high tensile) for Tungsten Carbide 1300°-1750° F. (furnace temp.).

Welding alloy.

After the customary degreasing and grinding, the powdered alloy is spread on the surfaces to be joined, and the tungsten carbide tip is placed on top. The assembly is then heated until the alloy melts. The metal flows freely at a very slight increase in temperature above the melting point since the weld metal is pulverized. Oxidation of the tungsten carbide is prevented, as each particle of molten alloy immediately "tins" and adheres to the surfaces being joined.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that help you to

DO THE JOB *with* FEWER MEN

*Godfrey* Bucket Conveyor is one-man operated. It's setting efficiency records for loading trucks with sand and gravel.

*Godfrey* Drag Portable Conveyor GP-12 is an extra large capacity crushed stone, sand and gravel handler.

*Write for Bulletin*

**Godfrey Trough Belt Conveyor**

. . . a man-saver and money-maker for all producers of sand, gravel, crushed stone, cinders and other abrasive materials.

Like all *Godfrey* Conveyors, it combines power, rigidity and strength to a degree that insures many years of continuous service life at a low operating cost.

**GODFREY CONVEYOR CO.** **Elkhart 6, Ind.**

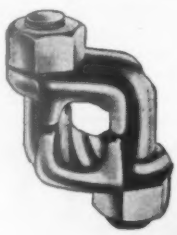
Save Metals... Speed Wire Rope Work.. With a FIST-GRIP

The "Fist-Grip" Clip Has 3 Strikes on Hitler

**Saves accidents** — can't be put on wrong; doesn't weaken rope; greater holding power.

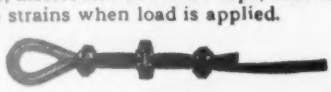
**Saves metals** — 25% fewer clips do the job better; no crushed rope ends; flush nuts — no battered threads.

**Save time** — fewer clips to put on; nuts on opposite sides tighten easier, faster with any type wrench.



Greater holding power with 25% less clips!

**"Finger-Pinch".** U-bolt clips unavoidably crimp, distort and bow wire rope, causing reverse strains when load is applied.



**"Fist-Grip".** Fewer Safety Clips hold rope straight in smooth, vise-like grip, with no protruding threads to get battered in use. Clips and rope can always be used on the next job.

Distributed through
Mill, Mine, and Oil Field Supply Houses
Be sure your Catalog reference is
Pit & Quarry Handbook.
FORGING A SHARE IN VICTORY

THE THOMAS LAUGHLIN Company
PORTLAND 6, MAINE

## ● New Type Slurry Pump

The Morris Machine Works has recently developed a vertical close-coupled slurry pump in most of the standard sizes from 1½ inches Type S to 6 inches Type S. This pump will handle mixtures of abrasive solids and liquids as efficiently as our standard line of horizontal slurry pumps. The Type S-VC pump, however, has certain advantages over the horizontal unit:

Slurry pump.

1. Considerably lower in cost.
2. Occupy less than one-half the floor space of a horizontal unit.
3. Easy to dismantle. To remove the impeller and rotating assembly it is withdrawn through the top of the pump casing merely by loosening and removing bolts. Motor and motor support are removed as a unit with the rotating element. The suction and discharge piping remain undisturbed. This design is especially adaptable to pumps with moderate size motors up to 50 horsepower. Beyond that horsepower the motors become rather unwieldy and it is then advisable to use the horizontal slurry pump construction.

This pump has exactly the same hydraulic passages as are found in the company's regular line of horizontal pumps. The impeller has a smooth easy entrance and is designed for the smoothest possible flow of the abrasives through the pump. Its pressure-balance design minimizes circulation of the solids from the shell passages to the eye of the impeller.

For handling neutral mixtures or mild caustic liquors, the motor shaft is adequately protected by means of a heavy shaft sleeve through the stuffing box. For acid mixtures, the impeller is threaded directly to the shaft and the shaft sleeve is cast integral with the impeller.

The pump parts can be furnished in a large variety of commercial alloys, depending upon the service. The entire unit contains only two bearings which are located in the motor itself, the sizes of which are specified by the company to be certain that they are adequate for all loads imposed by the pump. As against this bearing construction, the horizontal pump has a total of four bearings, two in the pump and two in the motor. Since the pump bearings are entirely eliminated the S-VC pump is free from pump bearing maintenance.

## ● Paper Bag Closure

The Bemis Bro. Bag Company has developed a new type of multiwall paper-bag closure designed particularly for war service but suitable for many peace-time applications, particularly export. The new closure, called the "Aquatex," consists of a tape, which is made of starched crinoline laminated to double-napped flannel and sewed on the bottom of the bag when it is manufactured. It is then dipped in a special wax which penetrates the crinoline and is absorbed by the flannel and the sewing thread. It is thus diffused between the plies of the paper in the bag and forms a ply-by-ply waterproof closure. The same method is used to close the top of the bag after it has been filled at the user's plant. A test made with multiwall paper bags fitted with this type of closure and filled with water-soluble salt revealed that they withstood the action of the elements in outdoor storage during a New England winter and preserved the contents intact, according to the manufacturer. After nearly five months of such storage the filled bags were dropped from a height of 5 feet, once on each end or butt, once on each side and once on each face, over an 8- by 4-inch wooden block. Despite this test, the contents on opening the bags were found to be clean and dry.

PERFORATED METAL SCREENS
FOR SAND, GRAVEL STONE, ETC.

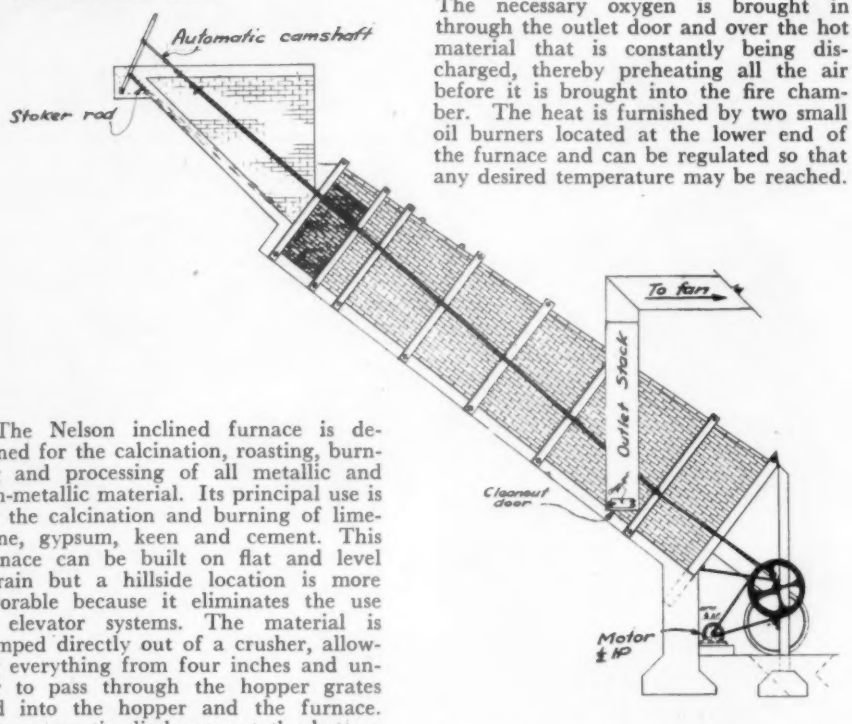
*Manufactured exactly to your specifications.*

Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.

Prompt Shipment

CHICAGO PERFORATING CO.
2435 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1459

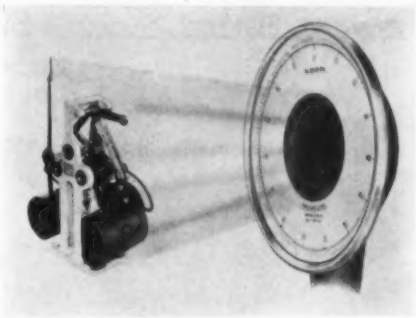
## ● Inclined Furnace




The Nelson inclined furnace is designed for the calcination, roasting, burning and processing of all metallic and non-metallic material. Its principal use is for the calcination and burning of limestone, gypsum, keen and cement. This furnace can be built on flat and level terrain but a hillside location is more favorable because it eliminates the use of elevator systems. The material is dumped directly out of a crusher, allowing everything from four inches and under to pass through the hopper grates and into the hopper and the furnace. The automatic discharger at the bottom controls the flow of material and the speed of the discharged is governed by a small variable-speed motor, allowing the material to discharge fast or slow as required for through and perfect burning of the particular material to be treated. The necessary oxygen is brought in through the outlet door and over the hot material that is constantly being discharged, thereby preheating all the air before it is brought into the fire chamber. The heat is furnished by two small oil burners located at the lower end of the furnace and can be regulated so that any desired temperature may be reached. Gas may be used for fuel where it is preferred instead of crude oil. Victor J. Nelson Engineering and Construction Company, 1321 Riverside Drive, Burbank, California.

## ● Speeds Weighing

The improved Kron ball bearing, springless dial mechanism of the double pendulum type is the precision-built "brain" around which every Kron Scale is designed and made. It speeds weighing, counting, batching, measuring and testing operations with accuracy and dependability by reducing these operations to a simplified "load and look" procedure.



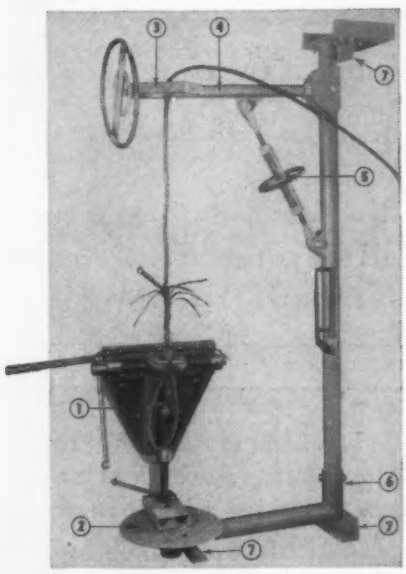
Dial mechanism.

Featuring specially designed ball bearings to eliminate wear at bearing points, the gear sector and shafts carrying the indicator and pendulum arm weights are all mounted in fixed centers. This assures perfect alignment at all times and prevents these parts from being unseated even when they are subjected to shocks or jarring vibrations.

Kron scales are now made by the Yale & Towne Manufacturing Company, Philadelphia.

## ● Wire Rope Splicer

A modern means for splicing wire rope is now being manufactured by Garlinghouse Brothers, Los Angeles. The Gar-Bro Splicing Rig is compact, structurally self-contained, portable. The entire unit without splicing vise, weighs only 325 pounds. Knocked down for shipment, none of the three sections weighs over 150 pounds. Rig may be set up, bolted to a post or lashed to a tree and be in operation in ten minutes. Overall size is 96" x 45" and the unit may be set up for horizontal or vertical operation. Any standard vise (1) may be attached to the revolving stand (2) which is supported by a ball-bearing base. Above splicing vise is a quick-opening jaw type gripping vise (3) supported by a tension member (4). Gripping is actuated by spining a large heavy rimmed wheel. Any desired tension is put on the cable by vertical adjustment of the tension through a double-acting screw provided with a hand wheel. (5) By revolving the vise stand cable is easily untwisted for splicing. Hooks for tools the workman uses are welded on the vertical member which detaches from the bottom member at (6). At three points (7) are right angle mounting pads for vertical or horizontal installation.



Rope splicer.

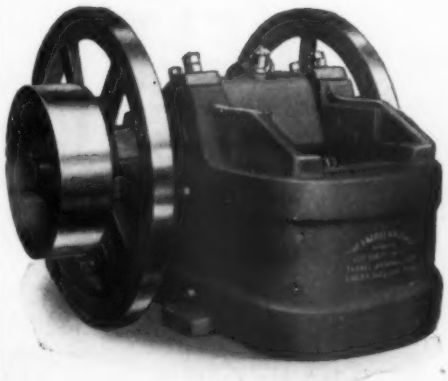
## ● Hoist Hook

A heavy duty hoist hook that safely handles loads up to 200 tons has been put on the market by the American Chain Ladder Company, New York. A single No. 2 Aclc Safety Hoist Hook weighs only 9½ lbs. yet its guaranteed capacity of 10 tons and has successfully withstood a Columbia University laboratory proof load test of 60,000 lbs. The purpose of the Aclc Hoist Hook is to keep hoist and load in true alignment, while the patented shoulder and lip eliminates load slippage and hook straightening. Even should the heavy pin shear, the weight of the load would continue to hold on the safety shoulders and lips. These self-locking shoulders and lips, incidentally, were carefully designed to clear hatches, cornices and other protuberances without snagging.

● Your country is still at war, —are you?


FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.



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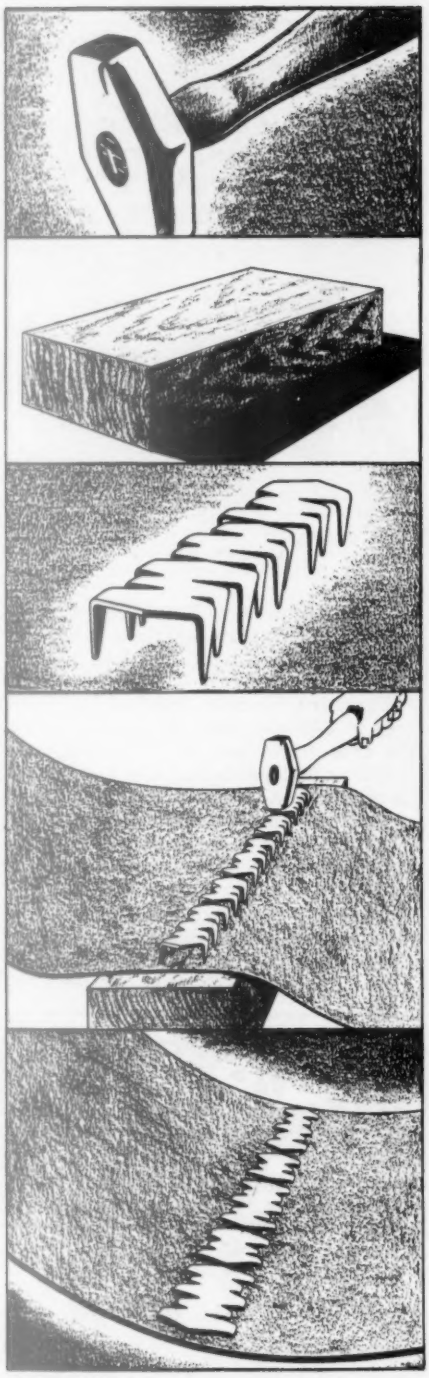
17 John St. New York, N. Y.



BRISTOL'S BELT FASTENERS

For leather, rubber or woven belts and conveyors — up to 13/16". Write for Bulletin 728A.

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137 Bristol Road, Waterbury 91, Conn.
DISTRIBUTORS EVERYWHERE

## ● Constricting Clutch

The Fawick Type CRRB Airflex Clutch is the constricting type, in which the friction blocks are mounted directly on the rubber element and in which the torque is transmitted directly through and by the side walls of the rubber elemen' The only element subjected to

wear is the friction block. In this construction the friction block is bonded through a special process to a steel backing plate; this assembly is removable by withdrawing the two pins which hold each friction block assembly in place. The closest possible approach to uniform pressure on all sections of the friction block area is obtained since it is impossible to build up concentrated pressure on any individual friction block assembly. The type "CRRB" clutch is assembled in 18 sizes ranging from 6-inch diameter to 60-inch diameter on the friction surfaces. It is a product of Fawick Airflex Company, Incorporated, Cleveland.

● Your country is still at war, —are you?

# Trade Literature

The pieces of literature listed below can be obtained direct from the manufacturers named, or requests can be addressed to Pit and Quarry's "Service to Readers" Department.

THE WIRE GROMMET V-BELT. 4 pages. Explains and pictures construction and uses in handling tough transmission problems. B. F. Goodrich Company, Akron.

SAFETY RULES FOR OPERATORS OF POWER INDUSTRIAL TRUCKS. 4 pages. Presents 34 safety ideas. Elwell-Parker Electric Company, Cleveland, Ohio.

COMPLETE DREDGER'S BULLETIN. (BULLETIN 844-D), 56 pages. Illustrated. Amsco, Chicago Heights, Illinois.

NEW PRODUCTS BOOKLET. 32 pages. Vest-pocket size. Clark Equipment Company, Buchanan, Michigan.

PIPE COUPLINGS AND FITTINGS. 35 pages. Victaulic Company of America, New York.

SPEED REDUCERS. 92 pages. (Catalog 144). Winfield H. Smith, Inc., Springville, New York.

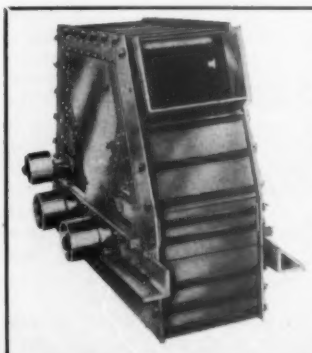
BUCKETS FOR SINGLE-DRUM HOISTS AND HOOK-ON APPLICATIONS. 48 pages, (Catalog 2002). Blaw-Knox Company, Pittsburgh.

THE PERFECT OIL RETAINER FOR MODERN BEARING PROTECTION. 34 pages. Chicago Rawhide Manufacturing Company, Chicago.

BOTTOM DUMP EUCLIDS ON THE MOVE. 24 pages. Euclid Road Machinery Company, Cleveland.

REX SPEED PRIME PUMPS. 20 pages, (Bulletin 447). Chain Belt Company, Milwaukee.

USED EQUIPMENT FOR QUARRIES, PITS, CEMENT AND LIME PLANTS. 4 pages. H. O. Conklin, 1660 West 104th Street, Chicago.



**This new double-impeller crusher will produce from 100 to 150 tons per hour of material passing 80% through a 1-inch mesh.**

It's compact in design, light in weight (12 tons), and saving in power (from 50 to 75 horsepower drives it). And, above all, it's

**Adaptable to portable or stationary work.**

*Write for complete information.*

NEW HOLLAND MACHINE CO.
NEW HOLLAND PENNSYLVANIA

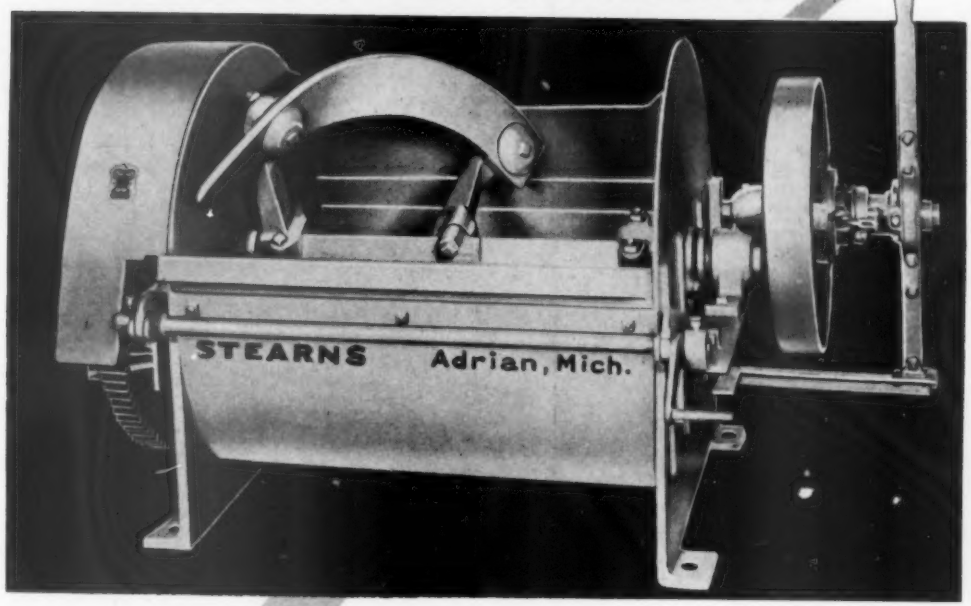
DECEMBER, 1944

The CONCRETE MANUFACTURER

A Special Section of ...

● ● *Second E Flag star awarded Sept. 11, 1944.*

## STEARNS MIXERS




# Memo for Buyers!

● **Hundreds of** modern concrete products plants are using from one (1) to as many as eighteen (18) Stearns batch mixers.

● **They continue to buy them,** continue to swear by them because Stearns machines do a better mixing job with less man-power and at comparably lower maintenance costs.

● **Advantages** include lowest charging height — Conveniently located door control—Handy bag shelf—Quickly shifted, removeable, wear-resisting liner bars—"Sterloy" mixing blades—Bearings: self-aligning, anti-friction—Drums of steel plate welded to heavy heads. Supplied in 12, 18, 28, 42 and 50 cu. ft. capacities with pulley, V-belt or Gear-head motor drive.

● **New Mixer folder** mailed upon request. Tell us the capacity you need and we'll gladly refer you to Stearns-equipped plants located within convenient visiting distance.

*Performance* **Speaks Louder than Words**

**ASK ANY STEARNS OWNER**

A FEW OF HUNDREDS

**Universal Pipe Co.**
Columbus, Ohio
18 Stearns Mixers

**Concrete Units Co.**
Bronx, New York
3 Stearns Mixers

**Peoples Lumber & Supply Co.**
Mt. Airy, Maryland
2 Stearns Mixers

**STEARNS**
MANUFACTURING CO. - ADRIAN, MICH.
GENE OLSEN, PRESIDENT

Designers and manufacturers of vibration and tamp type block and brick machines . . . Mixers . . . Skip Loaders. Licensed under the basic Gelbman Vibration Patents.

# The CONCRETE MANUFACTURER

DECEMBER, 1944

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

Published by Pit and Quarry Publications
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## Ready-Mixed Concrete Prices Levelled by OPA

Manufacturers of ready-mixed concrete in two areas, where increases in ceiling prices were previously granted, may round their adjusted prices off to the nearest 5 cents, the Office of Price Administration announced October 25. This action, effective October 27, was taken by the O.P.A. so that ceilings for ready-mixed concrete will conform with the established industry practice of quoting prices to customers in dollar-and-cent amounts rounded off to the nearest 5 cents.

Such rounding off will have no effect on the general level of prices for the commodity, since some prices will be increased by a few cents and others decreased by similar amounts.

The areas in which the price increases were previously granted are: (1) Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, eastern Pennsylvania, Maryland, Delaware, Washington, D. C., the city of Alexandria, Va., and five counties in northern Virginia; and (2) Michigan, Ohio, West Virginia, western Pennsylvania, a portion of eastern Kentucky, and the western tip of Virginia.

(Amendment No. 59 to Order A-1 Under Maximum Price Regulation No. 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other than Apparel—effective October 27, 1944.)

## N.C.M.A. Studies Curing

A study of the proper curing of concrete masonry units has recently been undertaken by the National Concrete Masonry Association. The special committee formed to study means whereby quality of the product may be improved and curing time reduced to a minimum, is headed by Jay C. Ehle, Cleveland. Other members are Benjamin Wilk, Detroit, and Philip Paolella, Hamden, Connecticut. An extensive research program in this field is planned, with association members invited to pool the results of their individual efforts.

## New Owners Take Over Old Concrete Co.

Roy McCandless

On September 15, Concrete Units, Incorporated, Detroit, headed by Roy N. McCandless, was purchased by Horn Fuel & Supply Company of that city.

The company will continue to operate under the same name; and plans of the new owners include keeping all personnel in their present positions, and expanding operations.

Roy McCandless, who is widely known in the concrete products industry, has successfully directed this company for the last ten years. He has long been active in the affairs of the National Cinder Concrete Products Association and the National Concrete Masonry Association, in each of which he has been president. He plans to continue in the business, he says, "after taking some time out for a rest and looking for a new location."

## Airfield Contract

The A. J. McMillan Company, Seattle, manufacturers of concrete products, are working at capacity to supply concrete pipe for construction work at Boeing field and the advance depot at Tacoma. The company, with plants in Seattle and Renton, is equipped to machine-make pipe up to 42 inches. The Renton plant manufactures up to 18-inch pipe; and the company is engaged also in making 48-inch pipe of the tongue-and-groove type for use in the Boeing drainage project. In both Seattle and Renton former concrete products plants were taken over, their facilities improved and new machinery added. The McMillan Company, also makes septic tanks, drain tile, chimney blocks, Y's and T's and various sewer fittings.


● Your country is still at war, —are you?

# Toronto Concrete Firm Specializes in Stone Face Tile and Burial Vaults

**Artificial Stone Tile Product for Trimming Bay Windows and Doors Finds Ready Acceptance by Stone Masons and Builders**

• Left, typical modest home with concrete tile trim on bay window and doors. Above, B. Eakins standing in front of tile-trimmed plant building.

another ON THE SPOT report

Century Concrete Vault, Limited, Toronto, is one of many small operators on this continent concentrating on the manufacture of a few concrete specialties. In this plant concrete burial vaults and artificial stone face tile are made. Vaults had been made for many years when the production of tiles was begun to compete with the natural stone facing widely used in this section. The new product was readily accepted by stone masons and builders and is being sold chiefly for trimming bay windows and doors of moderate-priced homes and for the entire fronts of more expensive homes. It has also been used on some business buildings but this market will not be pushed until modern high-capacity production equipment can be installed.

At present these units are being made in mold boxes and are hand tamped. A 1½-inch layer of concrete made with granite dust and screenings is first laid in the bottom of the box. Over this is poured a layer of ordinary 3,000-pound concrete which is thoroughly tamped to insure a perfect bond between the two layers. After the units are cured about ¾-inch of the granite facing is pitched off to simulate natural stone, an arris or straight edge is cut on each end block, and all fractions or specials are cut. Originally each order of blocks was custom tailored for the particular job but this is no longer done. Now only 1-, 2-, from 2⅜- to 11¼-inches high—all in 5- by 10-inch units. Whatever cutting is necessary, other than frac- 3-, and 4-course units are made— tions or specials, is done by the stone masons at the job.

Some sills are also made at this plant by similar methods but concrete joists have never been pushed by anyone in this area because of the lumber competition. R. Eakins, owner of the Century Concrete Vault Company, is also superintendent of the Leaside Block and Tile Company which operates a sizable plant making both sand and gravel and cinder concrete blocks. These blocks are widely used for basements and foundations but the local clay brick competition has held an edge on wall construction.

## Gibson Company Opens New Plant

The Gibson Concrete Pipe Company has begun the construction of a new concrete-pipe manufacturing plant at Delano, California, north of Bakersfield.

The company is installing a second pipe machine in the new plant, doubling the capacity of the old operations located about 10 blocks distant from the new plant. The storage yard at the new plant will be 200 by 600 feet in area, about twice the size of the old.

M. C. Gibson is president and general manager of the company.

## 40 Years in Business

M. H. (Monty) Graham, vice-president of the Pacific Rock & Gravel Company, Los Angeles, is wearing a specially-inscribed ring, the gift of his associates who honored him recently with a dinner commemorating his more than 40 years in the aggregates business in the Los Angeles area.

Mr. Graham is a native of Toronto but has lived in Los Angeles for a half century. Before entering the aggregate field he was connected with the Pacific Electric Railway Company.

Purchase of the controlling stock of the Kickapoo Sand & Gravel Company, of Peru, by J. C. O'Connor & Sons, Inc., of Fort Wayne, operators of another gravel company here, was announced recently by W. F. Nattkemper, local Kickapoo manager. James Miller, local employee of the O'Connor firm, has been named manager of the Kickapoo plant, according to the announcement. He will replace Mr. Nattkemper, who plans to return to Terre Haute, his former residence. There will be no other changes in the personnel, the announcement stated.

## Joe Shiely, Consigned to Maternity Ward with Gastric Ulcer, Gives Birth to Poem

It has been some time since we have published anything in these columns about the exploits of Joe L. Shiely. For the benefit of those few readers who are not acquainted with Mr. Shiely we might add that he is one of the leading producers of sand and gravel, ready-mixed-concrete, and crushed stone, with headquarters in St. Paul and operations wherever a big enough demand exists, His life story and climb to success would rival any Horatio Alger story. For the past year or more he has been busy producing all the aggregates and ready-mixed-concrete for the huge multi-billion dollar "mystery" war plant being built near Hanford, Washington, by the Hanford Engineering Works, a du Pont affiliate. One of the accompanying photos shows him at that job, identification badge and all.

All this merely leads up to our story which is in a somewhat lighter vein in spite of the fact that it began with Mr. Shiely in a hospital in St. Paul in May of this year for a 1-month session with gastric ulcers from which he has fully recovered. He was put in the maternity ward (just why we have not been able to find out) and, during his stay, wrote the poem which follows:

### It's an Ulcer

Again the trays go past my door
What tempting trays they seem
But nothing finds its way to me
'Cept a glass of milk and cream.

It's milk and cream at 7 o'clock
It's cream and milk at 8 o'clock
At 9:00 o'clock there's milk and cream
At 10:00 you guess my fate!!!

On every hour throughout the day
My nurse comes—bless her grin
Her eyes with roguish twinkle say—
Here's milk and cream again.

Each magazine I look at
Shows tempting tasty eats
I dare not linger with them
For I must not think of treats.

So I seek for peace in slumber
'Tis there I have my roasts
My pies, my tarts, my chili
Plus my fill of Melba toasts.

Of these my doctor finds no trace
These dreams aren't what they seem
But they are my ray of sunshine
In my world of milk and cream.
"Twenty-one days of Sippy diet"

Judge John Rounds of St. Paul, in the hospital at the same time, and familiar with Mr. Shiely's history and the fact that he was king of the St. Paul Winter Carnival a few years ago, sent a copy of the poem to Dr. G. Harold Dunn of River Forest, Illinois. Dr. Dunn, also a kindred spirit, has seen a number of these carnivals and thinks Mr. Shiely was the best king they ever had.

His comeback follows:

### Long Live the King

Your poem "It's An Ulcer"
Really wasn't bad
But why should you be kicking?
Look at the fun you've had.

Remember, the others too
Have had to drink their cream
Although I know it's awfully tough
For a "Wearer of the Green."

Of course, if you don't like it
When they pass around the cup
You could ask for something stronger
Just get your Irish up.

Still, you can always look back
When, as King, you reigned supreme
And toured around the city
With that very lovely queen.

Joe Shiely in his royal robes . . .

. . . and "on the job" at Hanford.

Dressed up in all your royal robes
When you appeared upon the scene
Your subjects all would hail you
And your drinks were *never* cream!

You'd sing those sentimental songs
In your dulcet baritone
And, unlike Greta Garbo,
You didn't want to be alone.

So from a loyal subject
One who is Irish, too,
I hope that you'll be better soon
I'm pulling hard for you.

For when the War is over
And everyone is glad
We will make you King again
The best we ever had.

Incidentally, when Mr. Shiely was discharged from the hospital the nurses presented him with an identification bracelet . . . the kind usually reserved for new-born infants!

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## Allis-Chalmers Appoints Pacific Regional Manager

The appointment of A. J. Schmitz as Pacific regional manager was recently announced by Frank Angle, manager of district offices, Allis-Chalmers Mfg. Co.

Previous to his appointment, Schmitz was manager of the Allis-Chalmers Seattle office, and prior to that, manager of the Portland office. He has been with the company since 1914, and for 11 years was in charge of Allis-Chalmers operations in Cuba. He is a graduate mechanical and electrical engineer.

# Washington Firm Made Over Four Million Blocks in 1943

By WILLIAM M. AVERY

## Beginning with One in 1937, Company Now Uses Four Vibrating Machines for Cinder Block Production

another ON THE SPOT report

DURING 1943 the Hudson Equipment & Supply Company of Washington, D. C. produced the astounding total of 4,128,000 blocks, compared with a production in 1942 of 3,200,000. While the plant was being rebuilt in 1942, 90 per cent. production was maintained by careful planning of each step in the construction work.

The crane, hammer-mill and roll-crusher used in the preparation of cinders.

The Hudson company has been in the building business for the past 17 years, but it was not until 1937 that the firm entered into the production of cinder blocks and bricks. In that year a used Stearns temper was purchased and operated on a limited scale, and in the following year the present plant was constructed and two additional tampers were placed in operation. In 1939 two Stearns Joltcretes, one Number 7 and one Number 9, were purchased and installed to replace two of the tampers, and in 1940 the third tamper was replaced by a Number 7 Joltcrete. By 1942 the rapid expansion of the company's block business had outgrown the original plant building, and it became necessary to enlarge the plant considerably. The program in that year included the installation of a new Number 9 Joltcrete and a weigh larry.

The plant uses a combination of railroad and local cinders which are mixed in a 10,000-cubic yard stock pile in the storage yard by unloading trucks (containing the local material) and railroad cars (in which the railroad cinders are received) alternately. The cinders, of which 5,000 cubic yards is consumed per month, are moved from the stock pile to the feed hopper of the crushing plant by a Koehring gasoline crane with a ⅛-cubic yard bucket. The reduction is accomplished through a New Holland hammer-mill and a 16- by 16-inch roll-crusher which discharges the material into a pit. A Link-Belt bucket-elevator feeds the cinders into a 2-compartment overhead bin of 57-cubic yard total capacity. A Stearns weigh larry, which operates on a track below the bins, weighs and transports the batches to the 4 Stearns mixers located above the block machines.

Left, Charles S. Payne, plant superintendent; right, John F. Raff, production manager.

The cement is added to the mix in bags and some calcium chloride is introduced to expedite curing, the amount being determined to some extent by weather conditions. Since

Below, left.—General view of plant and storage yard. Note unusual height to which blocks are piled.

Below, right.—Company office also advertises products made and handled.

• In this view is the power lift truck used for yarding blocks and a truck used for delivering them.

the amount of contained moisture in the cinders varies widely, no attempt is made to measure the water used in a batch.

Carter hydraulic-jack lift trucks are used for moving the filled steel racks from the block machines to the steam-curing rooms, where they remain overnight. The heating system consists of open pipes for live steam and closed pipes for supplying dry heat, the former being applied for the first 4 hours of the curing cycle. During the remainder of the cycle only dry heat is used. The 4 curing rooms have a total capacity of 24,000 blocks.

The newest of the four vibrating block machines in this plant.

The racks are removed to the storage yard by an Elwell-Parker power lift truck, and the blocks are stockpiled for final curing. There is space in the yard for storing 600,000 blocks.

Ninety per cent. of the Hudson company's production since Pearl Harbor has gone into Army and Navy defense-housing projects. An average of 68 men were employed during 1943—the year of greatest production—and this force was maintained with comparatively little effort

The traveling weigh larry which feeds aggregates to the four concrete mixers.

despite the shortage of man-power prevalent on the east coast. The company operates its own fleet of 58 trucks for making deliveries, and these range from Ford and Chevrolet pick-ups to huge White tractor-trailers.

The Catholic University testing laboratory in Washington makes tests each month on the plant's output, and although District of Columbia regulations require a strength of only 700 p.s.i., Hudson's blocks generally average 1,000 pounds or more. About 90 per cent. of the blocks produced are 8- by 8- by 12-inch units, which are used in the District for both subgrade and above-grade construction. This unit weighs about 20 pounds, and the 8- by 8- by 16-inch block weighs about 26 pounds. The primary uses are in foundations, for back-up in wall construction, and in partitions. In some instances the blocks are used for exposed walls in commercial or industrial buildings.

## Minneapolis Stone Products Co. Sold

The Linwood Stone Products Company, Minneapolis, was recently purchased by an undisclosed party in the Scott county district court. The purchaser was represented by Edward L. Ruhl of the real estate firm of Ruhl and Ruhl, whose final bid of $48,250 exceeded those offered by George Harris, Rock Island, Illinois and Ralph S. Quelle, present manager of the company. The sale includes a 61 per cent. interest owned by the Liquidation Corporation, and a 39 per cent. interest of Henry W. Horst. Under terms of the purchase the entire concern as a "going business" is included. Ralph S. Quelle, according to Ruhl, will be retained by the new operator as manager of the company and Charles Carlson will continue as superintendent.

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The new business of Spicer & Hancock was recently formed in Gosport, Indiana, to manufacture cement blocks and burial vaults. While this firm is new, the business is not, having been established before the first world war by the senior partner, Otis R. Spicer. The new partner is Herman Sam Hancock, a promising young business man of that town.

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J. L. STUART, formerly of Anaconda Copper's consulting engineer's staff, has become associated with Sperry Products, Incorporated, it was recently announced by J. B. Farwell, president of that company. Mr. Stuart, as technical editor, will handle all writing relative to the Sperry line of hydraulic remote controls and other products.

# Ready-Mixed Concrete Plant Is Busiest Part of Texas Firm

## Part of Large Oyster Shell Output Used in Concrete and Bituminized Aggregates

another ON THE SPOT report

THE city of Houston, Texas, has been the fastest-growing large city in this country for many years, nearly doubling its population every decade. According to Census figures Houston was an infant of 27,577 people in 1890 and grew to 384,514 population by 1940. It is said to be near the half-million mark now. Along with this mushroom-like growth there has been an equal growth in the demand for construction materials. It is only reasonable to expect that, in a city pioneered by cattle and oil barons, the production of these materials would fall largely into equally aggressive and far-sighted hands.

It is not surprising therefore that one of the leading producers, Parker Brothers & Company, Incorporated, is headed by men like the five Parker brothers. W. R. Parker (Captain Bill) is president and general manager; Charles F. Parker (Captain Charlie) is vice-president in charge of the maritime equipment; B. K. Parker (Captain Briscoe) is secretary and in charge of production; George W. Parker (Captain George) is vice-president in charge of sales and distribution; R. H. Parker (Captain Bob) is treasurer. They formed this corporation in 1925 when its chief product, oyster shells, was used only as a base material on roads, driveways, etc., and as a basic ingredient by one cement plant. Since then many news uses for these shells have been developed and the Parker brothers have been identified with all of them. Oyster shells are now being used in this area in three cement plants, several lime, magnesium and paper plants, by oil companies, chemical industries, in the manufacture of chicken feed, and in ready-mixed concrete and bituminous mixtures.

The demand for shell and other products has grown so rapidly that the company has had almost a continuous expansion program in recent years. In addition to shell the company now produces sand, gravel, ready-mixed concrete, and bituminized shell. It operates two large shell dredges, a sand dredge, a sand and gravel plant, and a number of sand and gravel and shell distributing plants, some of them for general sales and some to supply shell to large industrial concerns in the Houston area and along the Gulf Coast.

The company's most interesting operation is the Dock 17 yard, on the Houston Ship Channel, which was built in 1939 when the company's downtown yard became inadequate to meet growing demands. At this yard shell and sand and gravel are stored and shipped, and dry-batched aggregates, ready-mixed concrete and bituminized aggregates are produced. The ready-mixed concrete department in particular has been active in recent years to meet the demand for vital war construction in this area. This plant has kept busy a fleet of 26 Chain-Belt Rex 2- to 6-cubic yard truck mixers, some of which occasionally also deliver from other yards of the company. In addition there are 14 dump trucks and several flat-bed trucks to deliver other materials.

Track and radial conveyors which feed sand to sizing plant. Asphalt plant is in background.

The Dock 17 yard is laid out to receive sand and gravel by rail from the Columbus plant or sand and shell from the fleet of 53 barges owned and operated by the company. These, incidentally, are made in the company's shipyard which grew from a small repair yard into a manufacturer of Diesel tugboats, steel barges up to 1,400 cubic yards capacity, and other maritime equipment, both for the company's use and for sale. The company owns 7 modern Diesel tugs and charters others.

At the dock these materials are

General view of yard showing concrete and aggregate-bituminizing plants with sand sizing plant and shell stock piles in background.

This modern air-conditioned office fronts on Navigation Boulevard, the main thoroughfare east from Houston.

unloaded from the barges into stock piles over a 500-foot concrete reclaiming tunnel. Most of this work is done by a Lorain 75 crane. The sand and gravel received by rail are unloaded by a General Excavator crane to stock piles over a shorter reclaiming tunnel parallel to the first. The reclaiming belt-conveyors in both tunnels feed these materials to the first of two long inclined conveyors to the Butler bituminizing plant. This plant can produce standard bituminous mixtures but makes mainly two special products developed by the company on which it holds patents. One of these is an asphalt-coated shell wearing surface made from ¾-inch-minus oyster shell with about 20 gallons of asphalt per ton. This makes a very satisfactory road surface which does not become slippery in wet weather or dusty when it is dry.

The other product is a cement-stabilized shell road base material. In this process clean oyster shell is ground in a pug mill with about 8 per cent. of cement and 10 to 17 per cent. of water. The resulting comparatively-dry mixture is spread evenly on a road-bed and rolled before it is covered with the asphalt-coated shell wearing surface just described.

The second inclined conveyor, instead of discharging into the asphalt-plant bins, can discharge these materials on a short horizontal belt-conveyor which feeds the ready-mixed concrete plant bins. This plant also has Butler bins and batchers and a 2½-cubic yard T. L. Smith plant mixer. The cement used is received in bulk in cars and is carried to the top of the plant by a bucket elevator. There is bin storage space for 3 brands of cement and 7 sizes or types of aggregates. The only way in which the design of this plant differs from standard practice is in the use of a weigh batcher larger than usual. This is necessary because the shell has a lower specific gravity than sand and gravel and bulks up larger. This plant is used primarily to produce plant-mixed concrete but also does some batching into mixer trucks and considerable dry batching.

The 2½-cubic yard plant mixer discharging concrete into mixer truck.

The shell received at this yard is sized on the dredges and the gravel sizing is done at the Columbus plant. Some sand sizing is done at the yard for special purposes by a very interesting little plant.

A short belt-conveyor receives the sand either from one end of the long stockpile reclaiming conveyor or direct from cars. It in turn discharges the sand on a short boom conveyor which is supported at one end on wheels on a circular rail. This makes it possible to discharge the sand into cars for shipment, on the end of the short reclaiming tunnel, or into the hopper of the screening plant. A bucket elevator feeds the sand from this hopper over a vibrating screen. The sized products drop into separate compartments of a small Butler steel bin from which they are loaded into trucks for shipment.

Under-track conveyor feeding sand from railroad cars to radial conveyor which is shown discharging to stockpile.

Adjacent to these plants is the shell-grinding plant of the Shellbuilder Company which makes poultry grit and various other crushed and pulverized shell products. A separate belt-conveyor feeds shell to this plant from the long stockpile reclaiming conveyor. All the belt-conveyors and bucket elevators at this yard were supplied by the Chain Belt Company.

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## ● Construction Report

New construction activity in the United States during October, 1944, totaled $308,000,000, the War Production Board reported November 13. This volume was 6 per cent. under the September, 1944, level and 40 per cent. below the volume of October a year ago.

Continuation of construction controls and seasonal factors are expected to restrict the volume of work put in place during the remaining two months of the year, resulting in an estimated $3,700,000,000 volume for the year 1944—less than half the construction volume of 1943. This estimate excludes repair activity, and in this respect differs from construction activity estimates compiled by other Federal agencies.

Privately-financed construction activity during October totaled $121,000,000, a 7 per cent. decline from the previous month and 12 per cent. under the October, 1943, activity. In this category residential work accounted for $39,000,000; industrial—$14,000,000; utilities—$40,000,000; farm—$15,000,000; and community buildings (commercial, hospitals, social and recreational, etc.)—$13,000,000.

Work financed by public funds in October amounted to $187,000,000, a 6 per cent. over-the-month decline and 50 per cent. under the $377,000,000 volume of October a year ago. Military construction totaled $57,000,000 in October; government-financed plant construction—$55,000,000; government-financed housing—$8,000,000; and all other non-industrial construction (community buildings, highways, sewer and water, conservation, etc.)—$67,000,000. Activity in publicly-financed types as a whole is expected to decline 18 per cent. in November.

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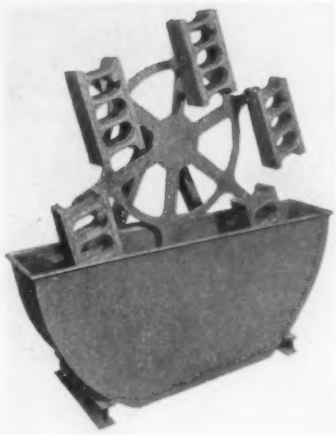

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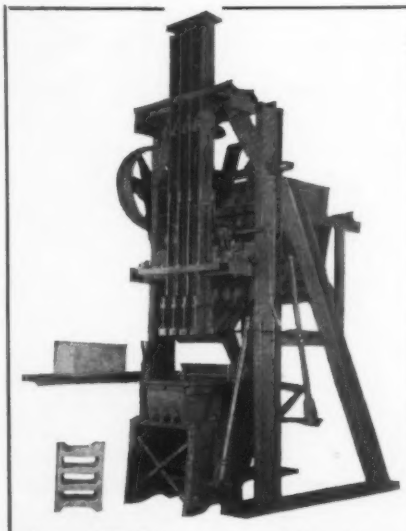

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Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers, and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

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# W.P.B. Survey Shows 1943 Use of Concrete Products Increasing

Production of 267,479,081 concrete blocks was reported by 1,374 plants in 1943, according to a survey just completed by the War Production Board's Building Materials Division, Clay and Concrete Products Section. The plants reporting represented a major coverage of production.

Production of other concrete masonry products in 1943 was: lintels and sills—22,684 tons; joists—3,838 tons; roof slab and tile—17,346 tons; manhole fittings—23,848 tons; septic tanks—10,262 tons; bricks—65,191 tons; and silo slabs—67,578 tons.

Data obtained in the survey indicated that the use of concrete blocks and other concrete-masonry products has widened in relation to the use of other construction materials, division officials said.

Heavy-weight aggregate blocks accounted for 145,582,018 units or 54 per cent. of the total concrete-block production; light-weight aggregate blocks accounted for 121,897,063 units. Production figures were computed in 8- by 8- by 16-inch equivalents.

In a similar survey conducted by the WPB Building Materials Division for 1942, a total of 301,096,071 concrete blocks were produced by 1,695 plants, of which 170,582,950, or 56 per cent., were heavy-weight aggrebate blocks and 130,513,121 were light-weight aggregate blocks. Plants reporting on 1942 production represented approximately 75 per cent. of the industry.

Sixty-one per cent. of 1943 reported production of concrete blocks was in the central and middle Atlantic states. Geographic distribution of production, by percentages, follows: 32 per cent.—Illinois, Indiana, Michigan, Ohio and Wisconsin; 29 per cent.—Delaware, Maryland, New Jersey, New York and Pennsylvania; 19 per cent.—Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia and West Virginia; 16 per cent.—all states west of the Mississippi, except Montana (where no production was reported); 4 per cent.—New England states.

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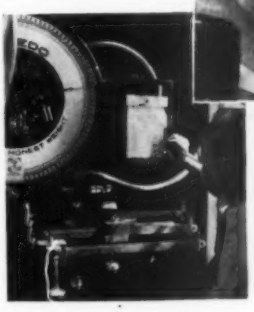

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A more comprehensive survey of the industry on a quarterly basis, beginning with the third quarter, 1944, is now being made by the Bureau of the Census in cooperation with the WPB. The survey is designed primarily to assist the war program, since shortages of some other building materials, especially lumber, are likely to continue. It will also be of assistance to the industry when peace-time building and construction operation are resumed.

Data requested from individual plants in the Bureau of the Census survey include total value of shipments; and production, stocks, and shipments (on a unit basis) of 11 items: light-weight aggregate blocks, heavy-weight aggregate blocks, light-weight aggregate concrete bricks, heavy-weight aggregate concrete bricks, chimney blocks, lintels and sills and coping, cast stone, joints, floor slabs, roof slabs, and silo staves. Information compiled for the third quarter, 1944, and subsequent quarters will be available to the industry and other interested groups upon request.

### McCullough Made President

Matthew P. McCullough, for many years treasurer and a director of the Masonite Corporation, Chicago, has been appointed president to fill the vacancy created by the recent death of Ben Alexander. Charles J. Winton, Junior, also a director, will be the new treasurer.

### C. B.'s Process Aggregates for Big Pacific Bases

During the past year a group of about 75 United States Seabees have processed all the aggregates and mixed and placed all the concrete that has gone into the huge military installations on one of the United States' important island bases in the Pacific. They have successfully operated a crushing-and-screening plant for aggregates, a concrete batching plant and a hot-mix asphalt plant as an integral part of our war machinery that is carrying the fight to our enemies, the Japanese.

The plants are operated under the general supervision of Lieut. E. D. Ayer of Denver, Colorado. R. L. Cook, chief carpenter's mate, of Sherman, Texas, is in charge of the concrete-batching plant which is capable of producing 100 cubic yards per hour. The batching plant has a 4-compartment storage bin for aggregates. Batching is done by weight and 5-cubic yard truck-mixers mix and transport the concrete. Because the plant was designed for use with bulk cement and the cement shipped to the island was contained in paper bags, Chief Cook, assisted by N. G. Summerfield, chief shipfitter, of Kansas City, designed and built an automatic cement "de-sacker." Details of the de-sacker are lacking but it is said to be doing a remarkably efficient job.

The crushing-and-screening plant is operated under the direction of F. W. Crownover, chief carpenter's mate, of Redding, California, assisted by C. M. Knight, chief machinist's mate, of Galene Park, Texas, and A. S. Mayo, chief shipfitter, of Decatur, Georgia. The aggregates plant has been operating 16 hours a day much of the time, and has a capacity of about 100 tons per hour.

A testing laboratory constantly checks the quality and gradation of the aggregates by modern laboratory methods to assure easy and correct blending of the various sizes.

### Will Expand Block Plant

J. R. Quinn, Elkton, Michigan, recently sold his tile and block plant to Iris and George Mansfield, of Detroit. The new owners intend doubling the capacity, which had been approximately 3000 tiles a day; and a new addition will be built to house a steam curing room. The plant also has labor saving machinery for handling and mixing gravel and mixed concrete.

The Azusa Rock & Sand Company of Azusa, California, is starting to build an entirely new crushing-and-screening plant near the site of its present plant which has been in operation for many years, according to H. E. Bender, president and general manager. A new batching plant to supply the concern's ready-mixed-concrete requirements will also rise alongside the new rock plant.

The new plant will have a capacity of about 3,000 tons per day. Concrete footings and foundations are already in place and the steel for the structures is expected to be erected within the next few months.

OPA recently announced an increase of 20 cents a barrel on the price manufacturers may charge for Portland cement sold in Southern California. The higher ceiling was based on the plea that an increase was needed to bring industry earnings to the level averaged from 1936 to 1939.


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*Long Range Machines*

CUT COSTS OF HANDLING MATERIALS

**Explanation of Picture —** The above picture of a small Sauerman Scraper digging gravel from pit and delivering to crushing plant shows the simple effectiveness of this method. This particular Sauerman machine consumes 4½ gals. of gasoline to move 45 cu. yd. of material per hour.

ALMOST any job of digging from pit, bank or pond or of stockpiling surplus bulk materials can be simplified by using a Sauerman Power Scraper or Cableway.

This equipment is very flexible and is readily adapted to any ground conditions. First cost is reasonable, maintenance expense is small and the simplicity of operation permits easy one-man control of even the largest Sauerman installation.

There is a size and type of Sauerman machine to meet every capacity requirement from a few tons per hour to many thousands tons per day.

*Write for Catalog.*

SAUERMAN BROS., Inc., 534 S. Clinton St., CHICAGO 7

# MEET YOUR *hidden losses* FACE TO FACE

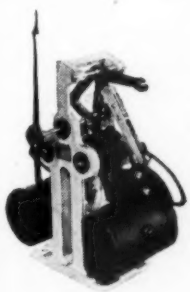
IN

WEIGHING...COUNTING
BATCHING...MEASURING
TESTING...INSPECTING

"Hidden losses" creep into your production costs every time a scale operator is forced to "guesstimate" a weight reading. When high, bulky loads obscure the scale dial face, time is lost, materials wasted and mistakes made. When faulty lighting prevents hair-line weight readings, "hidden losses" cut into profits.

To help you meet these "hidden losses" face to face, every Kron precision dial scale is equipped with the exclusive Kron Swivel Dial. The entire dial head rotates smoothly and freely through a complete circle in either direction at absolutely no loss of scale accuracy. At the operator's convenience, the Swivel Head can be turned to any desired position for a clear, unobstructed, accurate view of the dial chart and pointer.

Only Kron brings you this modern weight reading feature. Discover how its advantages will cut costs for you. Write to The Yale & Towne Manufacturing Company, Philadelphia Division, Philadelphia 24, Pa. and ask for your copy of the new catalog of Kron Scales made by Yale.

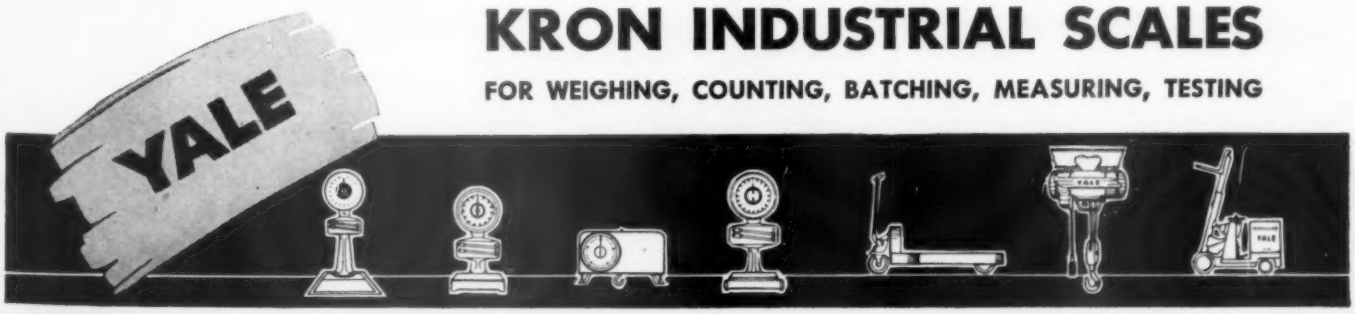


***...FOR DEPENDABLE ACCURACY***

An exclusive Kron engineering development, the improved ball bearing dial mechanism of the double pendulum, springless type, is the heart on which every Kron Scale depends for its unmatched accuracy and long life. Interchangeable in every Kron scale model, it reduces production weighing to a simple "load and look" procedure, cutting costs and saving time.

## KRON INDUSTRIAL SCALES

FOR WEIGHING, COUNTING, BATCHING, MEASURING, TESTING




MATERIALS HANDLING MACHINERY: TRUCKS—HAND-LIFT AND ELECTRIC • HOISTS—HAND AND ELECTRIC

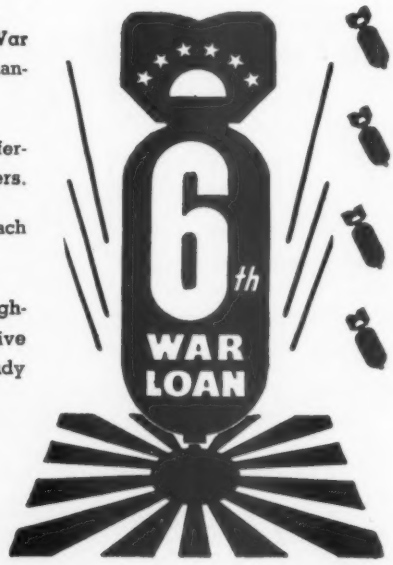
# They're Going Overboard For Victory—Are YOU?

## USE 8-POINT PLAN FOR AN OVERBOARD DRIVE IN THE 6th WAR LOAN!

**NOV. 20th TO DEC. 16th**

Our fighting men still have a long way to go! But—your plant-wide selling of the 6th can do much to shorten their embattled miles—lessen the price they so willingly pay for victory! Join the coast to coast parade of patriotic firms that are assuring an **"overboard" showing in the 6th** by following through on **every** point in the 8-Point Plan.

- Start the ball rolling by appointing a **6th War Loan Bond Committee,** representing labor, management and other groups.
- Carry on by selecting a **Team Captain**—preferably a returned veteran—for every 10 workers.
- Right at the start, establish a **Quota** for each department—and every employee.
- Arrange frequent **Meetings of Captains,** highlighting importance of their work—effective sales methods—and need for painstaking study of Treasury Booklet, Getting The Order.



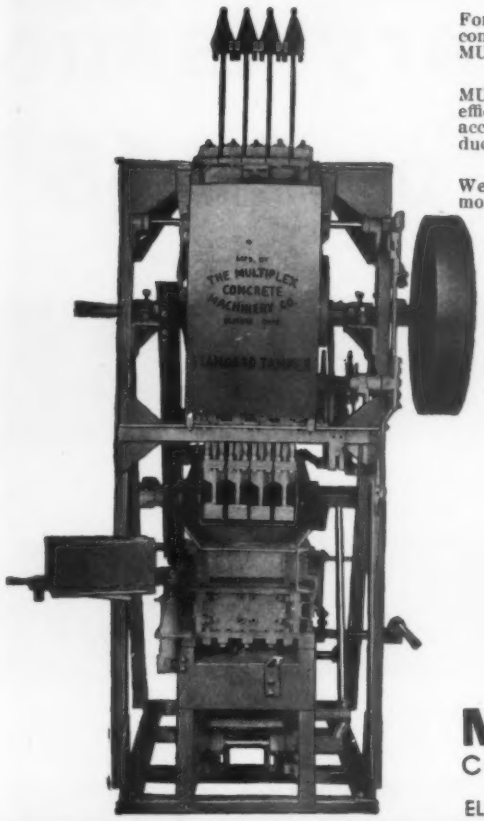

- Make definite **Assignments** to those best equipped to arrange music, speeches, rallies, competitive progress boards and meeting schedules.
- Issue **Individual Pledge Cards**—made out in the name of each worker and providing for both cash and installment purchase.
- **Resolicit!** This is the secret of "overboard" War Bond subscriptions. Your State Payroll Chairman has a special Resolicitation Plan for you to put into action near the end of the campaign.
- Give generously of your **Advertising Space** to drive home the War Bond story.

*The Treasury Department acknowledges with appreciation the publication of this message by*

***PIT AND QUARRY***

★ *This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council* ★

# MULTIPLEX Machines For Postwar Profits




For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

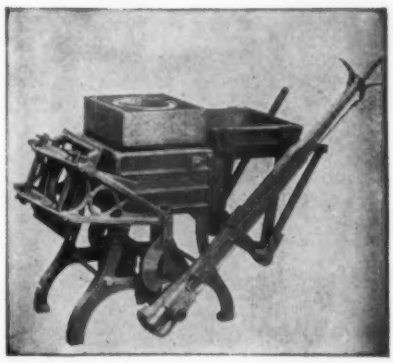
MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

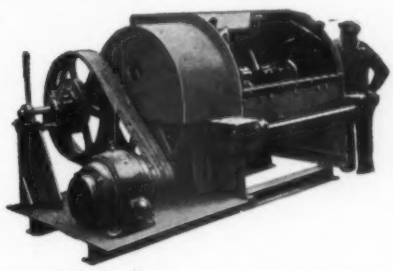
Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.

**MULTIPLEX**
CONCRETE MACHINERY CO.
Frank Muenzer, President
ELMORE • OHIO



The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

# Pit and Quarry Helps You Operate More Profitably

Every issue of PIT AND QUARRY is full of information you can use in your business. It gives you practical ideas on every phase of your operations.

To keep its readers fully informed, PIT AND QUARRY taps every source. Our field editors travel more than 30,000 miles a year to describe the processes and methods used by the outstanding plants making your type of product. Government activities affecting the field are interpreted so that you can better adjust your business to their regulations. Complete reports of all important conventions are published in PIT AND QUARRY. The new equipment and supplies which may make production more efficient are announced in each issue.

Reading PIT AND QUARRY is like having a conference every month with the leading men in your industry. You don't have to stir out of your chair to get information that otherwise would take you years to obtain by your own efforts and experience.

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**538 So. Clark Street, Chicago 5, Illinois.**

Enclosed find remittance for which enter my subscription to Pit and Quarry for 1 year at $2.00 starting with the December issue. (Foreign add $1.00 per year.)

My Name..... Title .....

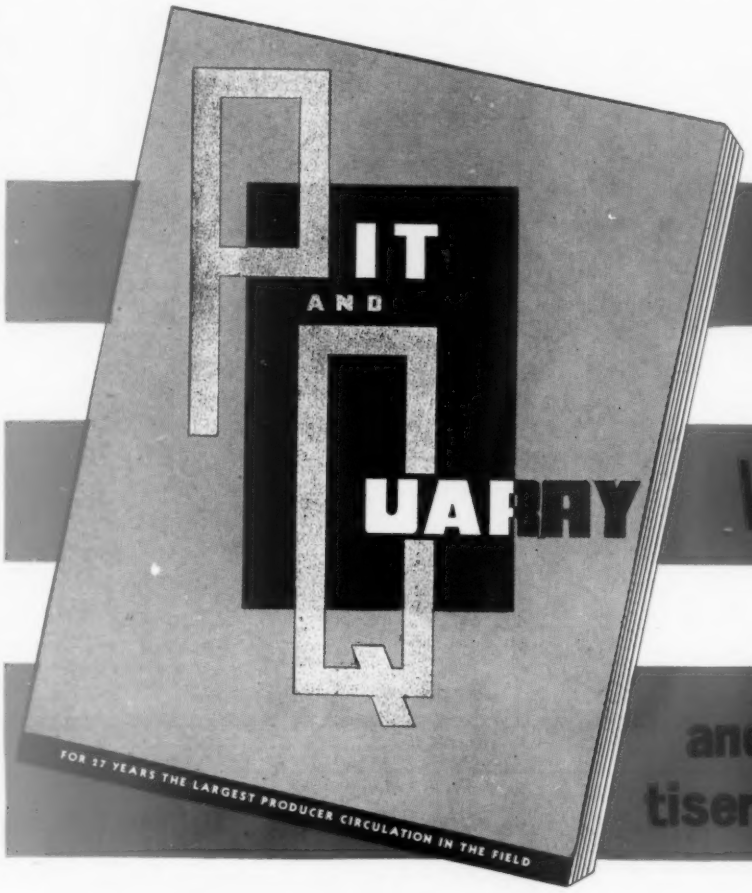
Company Name .....

Send to (Address).....

We Produce .....

The CONCRETE MANUFACTURER

# The GIANT January Issue for 1945




## Will Be BIG!

## Will Be Interesting!

## and Profitable to Advertisers and Readers Alike!

**● The coming January issue of Pit and Quarry will transcend all previous issues in the importance and value of its editorial content and in its value to advertisers. It will establish new standards in business-magazine publishing.**

● At this time, when nonmetallic-mineral producers are looking forward to a $4,000,000,000 demand for their products in the post-war years, the January issue of Pit and Quarry will provide a nationwide survey of the post-war programs of American cities, thus carrying on into the municipal field the comprehensive picture of post-war markets begun in the January, 1944, issue, which had a 56-page section devoted to the post-war construction programs of our state highway departments.

● The state highway survey in the last January number was so popular among producers and manufacturers of equipment that there was a large demand for reprints, some of which were used by the latter in their salesmen's classes dealing with post-war subjects. The new January issue will take equal rank with its predecessor in rounding out our preview of post-war business.

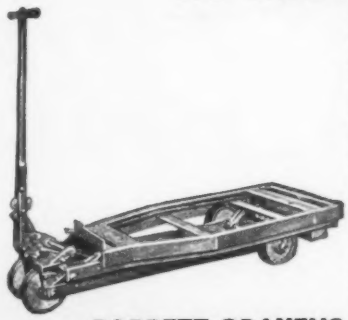
● As soon as V-E day comes and the present restrictions on the purchase of equipment are relaxed, there will be a tremendous demand from producers in our industries for new machinery to replace that so badly worn by unprecedented production schedules during the war. This, therefore, is the time for the prepurchase education of potential buyers by manufacturers of equipment, who now find themselves addressing an audience that is largely new. Within the last two years there have been many hundreds of changes in the personnel—administrative and production—of the companies in our field. The new men must be told now of the merits of your products.

**● Arrange immediately for space in the big January issue. The closing date is December 17 and space is limited.**

## PIT AND QUARRY, 538 S. Clark St., Chicago 5, Ill.

# BARRETT LIFT-TRUCKS

## ONE MAN HANDLES 48 BLOCKS NO BREAKAGE



Handle your green concrete products the way that more than 800 other concrete products plants do, WITH BARRETT LIFT-TRUCKS EQUIPPED WITH A SUPER-SPRING FRAME AND RUBBER TIRES. Eliminate breakage — joggling out of shape and spoilage. Save time, money and labor by eliminating all unnecessary handling and breakage. Take your blocks direct from the machine to the curing room—with ease and dispatch. One man handles 48 blocks of the 8x8x16 size—or, 32 blocks of the 8x12x16 size.
Write for illustrated circular.

**BARRETT-CRAVENS COMPANY**
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Representatives in all principal cities

# FASTEST POURING

Almost Any Job of Concrete Can be Done Faster with JAEGER TRUCK MIXERS

"HIGH DUMP"

Millions of yards of Jaeger Truck-Mixed Concrete on major war work (exceeding the output of all other makes combined) prove the advantages of these motorized concrete plants. Nimble, flexible and fast, they speed placement, solve problem of extended or continuous pours.

**THE JAEGER MACHINE CO.,**
**602 Dublin Avenue**
**Columbus, Ohio**

Mixers—Pumps—Hoists
Paving Equipment

or "LOW CHARGE" Type

# Are you ready?

Building programs are beginning to move fast. Are you ready?
N & F bins, with proper conveyors to store and load sand and gravel, will cut labor costs, cut trucking needs, save time and money at every turn. Stave construction—can be moved for re-erection. Any capacity. Guaranteed. Get catalog now.

**THE NEFF & FRY COMPANY**
CAMDEN, OHIO

# P. T. BARNUM *would have said:*

**"FREE! FREE! 80... Count 'em,—80 Lifelike MINIATURES**

OF READY MIXED PLANTS — CENTRAL MIXING PLANTS — BATCHING PLANTS — BULK CEMENT PLANTS — SAND AND GRAVEL PLANTS — CONCRETE PRODUCTS PLANTS — STORAGE BINS — COAL BINS — THE BUTLER CARSCOOP — PORTABLE CONCRETE HOPPERS — CEMENT TRANSPORTS — WEIGHING BATCHERS — CEMENT ELEVATORS — BIN GATES!!!"

**We say—"Yours for the asking—a profusely illustrated catalogue of all those BUTLER units. Ask for Bulletin 260".**

**BUTLER BIN CO.,** Waukesha, Wis.

# How CONCRETE is helping to meet construction needs

**FIRESAFE CONSTRUCTION.** Concrete provides rigid, durable, fire resistant construction. Many structures, such as floors on ground, need no reinforcement.

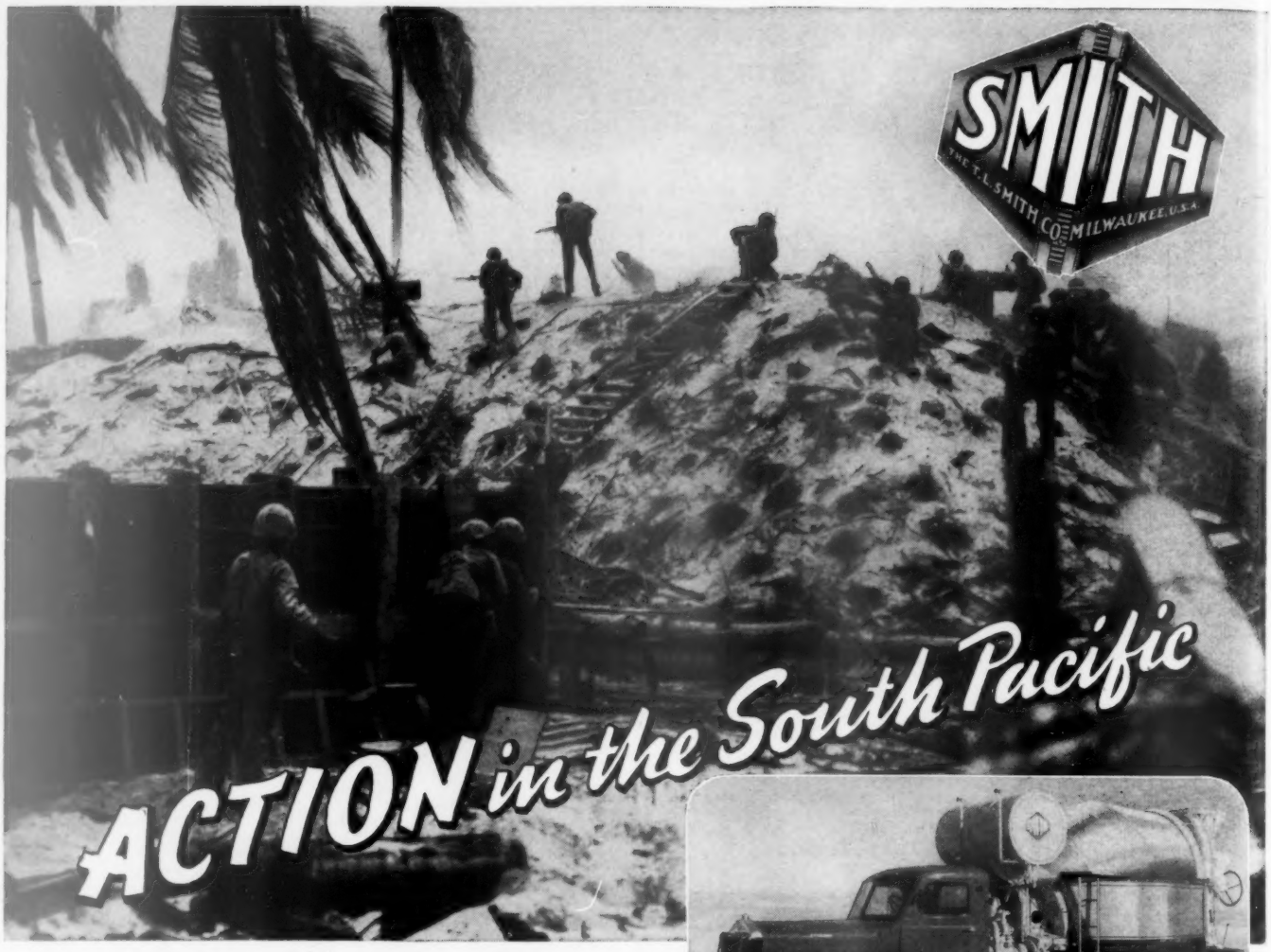
**TRANSPORTATION SAVED.** Concrete imposes a minimum burden on transportation facilities, since the bulk of the material is usually found locally.

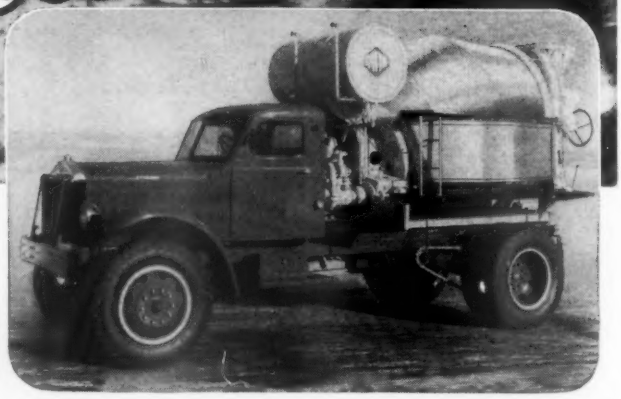
**TIME SAVED.** Simple methods, widely available concrete workers and local materials are helping to expedite jobs.

**"WHAT IT TAKES" ASSURED.** Strength, rigidity, fire safety, economy of first cost and maintenance result in low annual cost—the true measure of building economy.

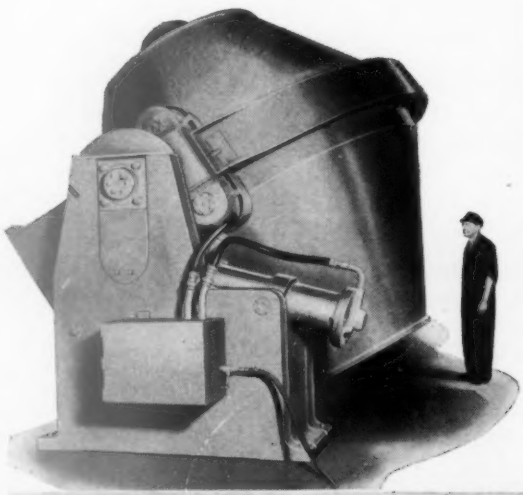
Concrete designers, contractors and products men are rendering valuable service by assisting in efforts to use all these advantages to the fullest where concrete is needed.

**PORTLAND CEMENT ASSOCIATION**
Dept. 12-58, 33 W. Grand Ave., Chicago 10, Ill.



## Out Where Speed and Dependability are "Must" Orders, SMITH TILTERS and SMITH-MOBILES are Pouring Fortifications!



*Smith-Mobile* charges faster because the wide feed chute has no obstructions—no shafts or rods to clog it up. *Smith-Mobile* mixes faster and better because of its patented "T" shaped spiral blades. It mixes without pressure against the discharge door. *Smith-Mobile* discharges under complete control, either fast discharge or a wheelbarrow full at a time. You can open the end door and inspect the concrete while the drum is mixing. *Smith-Mobile* is simple and rugged with fewer "gadgets" and therefore fewer troubles.

*Write today for booklet giving the details.*

**The T. L. SMITH COMPANY**

2887 N. 32nd St., Milwaukee 10, Wisconsin, U. S. A.

**CONCRETE MIXER MANUFACTURERS SINCE 1900**

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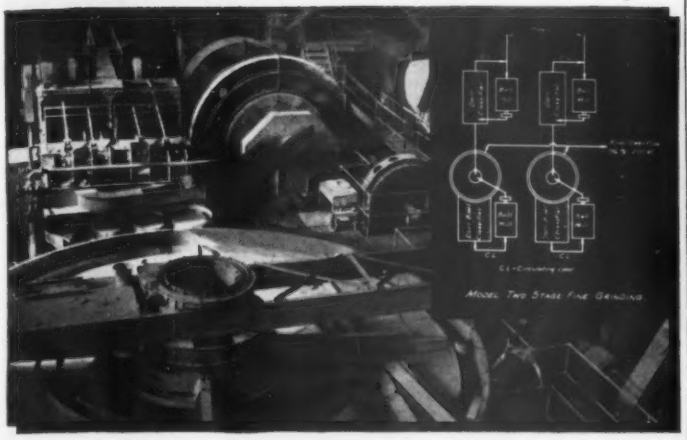

# for HIGHER mill capacity at LOWER operating cost

# THE DORR C.C.G. SYSTEM

Cement plant operators will find that the Dorr Closed Circuit Grinding System not only gives higher mill capacity and a better finished product but pays for itself in one to two years with savings in power, maintenance, mill balls and liners, etc. The finer raw grind means a sounder finished cement, low in free CaO, as well as an increased capacity of kilns and finishing mills.

You cannot afford to overlook this system if you are planning to build a new plant, modernize an old one or shift from dry to wet processing.

We would like to show you facts and figures on what we have done at other cement plants and can do at yours.

**ADVANTAGES of DORR C. C. G.**

**Less Power for Raw Grinding • Lower Consumption of Balls and Mill Liners • More Capacity per Mill • No Coarse, Stray Oversize in Slurry • More Uniform Slurry—Chemically and Physically**

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RESEARCH AND TESTING LABORATORIES . . . . . WESTPORT, CONN.

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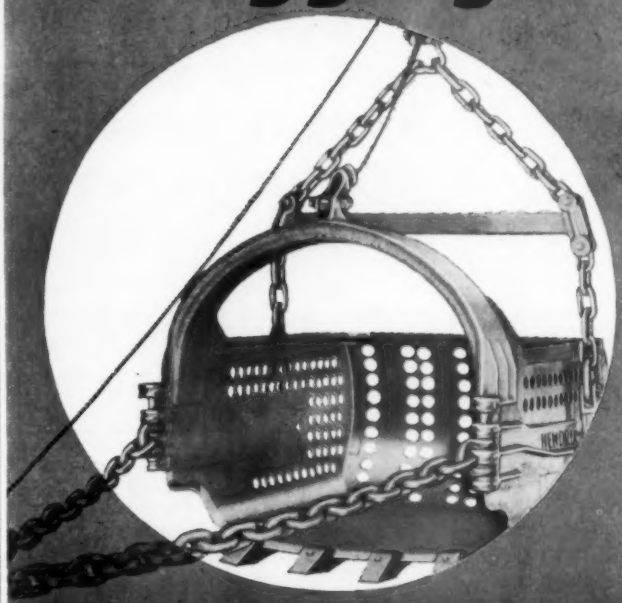
# *Unsurpassed* for WET or DRY digging



Get bigger pay loads . . . and greater "digability" with HENDRIX Lightweight Dragline Buckets.

20% to 40% LIGHTER THAN OTHER BUCKETS, type for type.
MANGANESE STEEL chains, fittings and reversible tooth points.
GETS PAY MATERIAL EVERY TRIP . . . even in wet digging.
ALL WELDED CONSTRUCTION . . . for greater strength and durability.
PERFECTLY BALANCED . . for easy handling . . . fills faster, dumps quicker.
LARGE BUCKET CAN BE USED ON SMALL MACHINE . . . or on long boom.

Three types—light, medium and heavy duty. ⅛ to 20 cu. yd. Write for descriptive literature . . . or ask your dealer.

**HENDRIX** *Lightweight* DRAGLINE BUCKETS

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Model 5SF Semi-Trailer with 10 Cu. Yd. Rock Body

## SEMI-TRAILER DUMP UNITS

WITH ROCK TYPE OPEN END OR STANDARD TAIL-GATE TYPE BODIES FOR ALL TYPES OF BULK MATERIAL HAULING ARE AVAILABLE FOR SALE TO APPROVED USERS. COMPLETE INFORMATION FURNISHED ON REQUEST.

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## MEDIUM TRUCKS

*Convert into a heavy duty truck with the*

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THORNTON GIVES 100% MORE TRACTIVE EFFORT..100% MORE PAYLOAD CAPACITY

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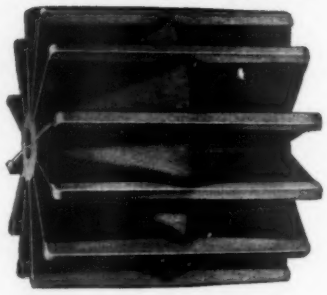
Investigate THORNTON *Automatic-Locking* DIFFERENTIAL for Replacement in Truck Axles
In Canada see: H. V. WELLES, LTD., Windsor

## THOUSANDS OF USERS TESTIFY

that the **Belt-Saver Pulley** saves money and rubber and prevents accidents on their belt conveyors and bucket elevators.



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**SPROUT, WALDRON & COMPANY**
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For Crusher Bearings

Bronze Inner and Outer Bushings

## Socket Liners

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P. O. Box 1336 ATLANTA 1, GA.

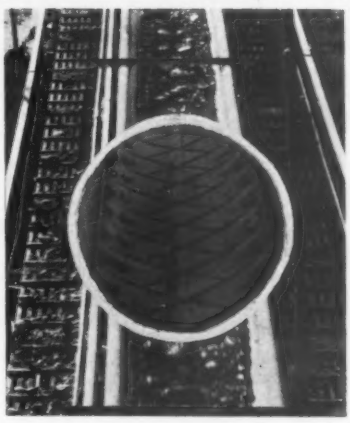
Advertise your wants and surplus equipment in

PIT AND QUARRY

# AMERICAN LIGHTNING

ribbed centre

## CONVEYOR BELT



The patented pattern of this belt, enables it to carry even wet loads up improbably steep grades without slipping. It is possibly the best belt in the world for conditions where slipping is bad.

**The AMERICAN RUBBER Mfg. Co.**

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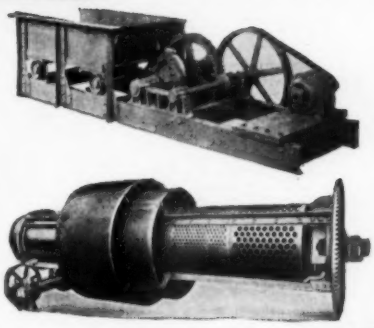
RUBBER PRODUCTS for INDUSTRY



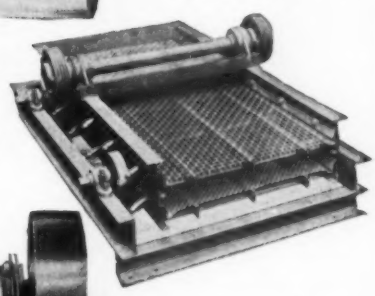
# McLANAHAN EQUIPMENT for

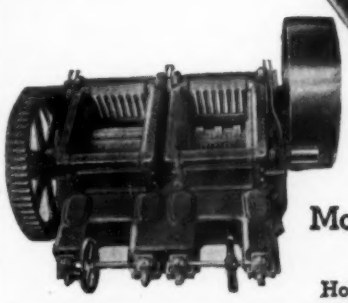
- STONE
- SAND
- GRAVEL



Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.





Let McLANAHAN & STONE solve your operating problems.

McLanahan & Stone Corporation

Established 1835

Hollidaysburg, Pennsylvania



## GRUENDLER CRAFTSMANSHIP

*On the.. Battlefront*

*Forward Base being constructed with crushed stone and gravel for the B-29 Super Fortresses.*

**Gruendler Portable JAW CRUSHERS**

**Preparing the Bases for the United Nations in China, India, Africa and Pacific Islands.**

These units must be sturdy, rugged and easy to operate with a minimum of maintenance. You will find these qualities coupled with top performance in every Gruendler Crusher.

# GRUENDLER

CRUSHER and PULVERIZER CO.

2915-17 North Market St., ST. LOUIS (6), MO.



## HANDLE MORE PAY LOAD WITH LESS CRANE TIME

# Blaw-Knox BUCKETS

**Send for the catalog which describes the bucket you need—**

- No. 1586—Blaw-Knox Concrete Buckets.
- No. 1606—Blaw-Knox Buckets for Contractors.
- No. 1696—Blaw-Knox Buckets for Single Drum Hoists for use on Railroads, Mills, Foundries, Etc.
- No. 1745—Blaw-Knox Buckets for "Burtoning" handling Nitrates, Grain, Potash, Etc.
- No. 1757—Blaw-Knox 2 Line Lever Arm Buckets for Rehandling, Barge Cleanup, General Purpose, Hard Digging, Dredging.
- No. 1865—Blaw-Knox 4 Rope Buckets for Coal, Ore and Cleanup

**HEADQUARTERS FOR CLAMSHELL BUCKETS**

Blaw-Knox buckets offer to industry the widest possible range of types and capacities specialized in application for the job; for excavating, rehandling, dredging, steel mill service, etc., in a word, for anything that can be handled profitably by a clamshell.

Blaw-Knox buckets are illustrated and described in great detail with dimensions and capacities in Blaw-Knox Bucket Catalogs which show how to select the exactly right bucket for your job. Write to

**BLAW-KNOX DIVISION of Blaw-Knox Co.**

2004 FARMERS BANK BUILDING, PITTSBURGH, PA.

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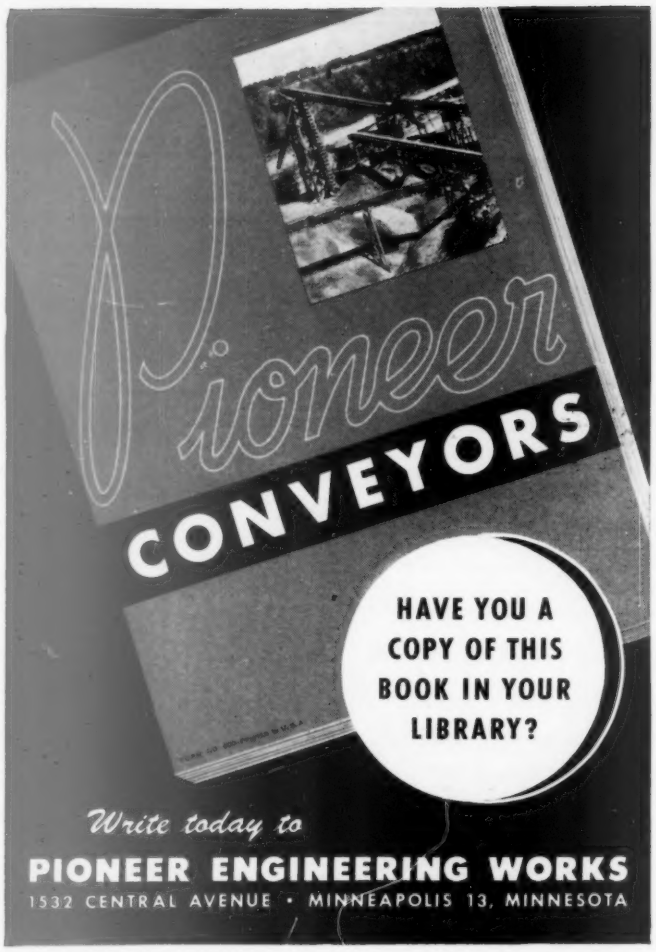
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## Baughman's New "Model C" Cinder, Chip or Lime Spreader

This Spreader is easily attached to any dump truck in a few minutes. Distributors always remain level — or can be tipped to any angle. **Spread remains near the ground.**

**Price $135.00 Complete, F. O. B. Jerseyville.**
**Net Weight, 175 Pounds.**

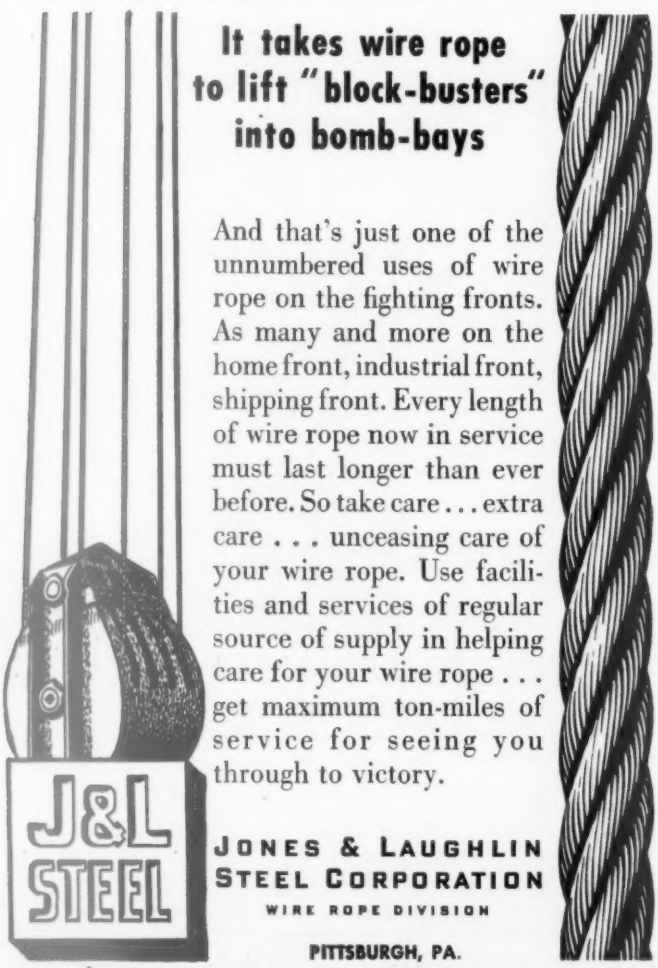
Manufacturers of the famous "Hi-Speed" line of Self-Unloading Equipment.

Model E, Belt Conveyor Type
Model D, Chain Conveyor Type
Model H, Wide Chain Type
Model F, Flat Bed Type
Model C, Cinder and Chip Spreader
Model J, Transfer Type
Model L, Car Unloader
Model M, Car Unloader

Ask for recommendations—we have a reliable distributor near you.

**BAUGHMAN MANUFACTURING CO., Inc.**
Factories • Jerseyville, Illinois

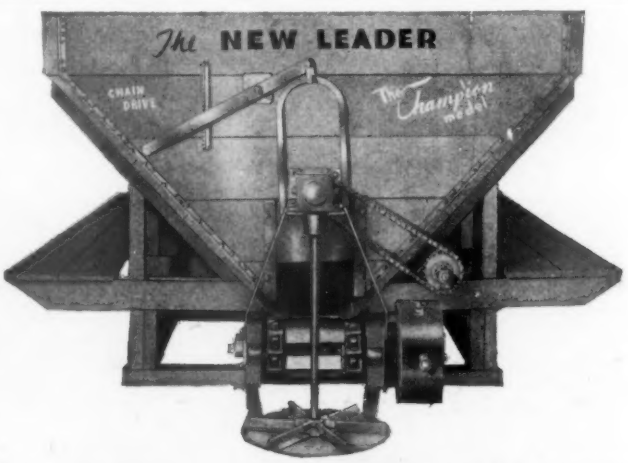
PRIORITIES WERE NEVER NEEDED FOR OUR EQUIPMENT!




## It takes wire rope to lift "block-busters" into bomb-bays

And that's just one of the unnumbered uses of wire rope on the fighting fronts. As many and more on the home front, industrial front, shipping front. Every length of wire rope now in service must last longer than ever before. So take care . . . extra care . . . unceasing care of your wire rope. Use facilities and services of regular source of supply in helping care for your wire rope . . . get maximum ton-miles of service for seeing you through to victory.

**JONES & LAUGHLIN STEEL CORPORATION**
WIRE ROPE DIVISION
PITTSBURGH, PA.




## FOR BETTER LIME AND MARL SPREADING

***Use the NEW LEADER Truck-Body Type Lime Spreaders . . .***

**GOOD NEWS!**

You can now buy NEW LEADER Truck Body Type Lime Spreaders without Triple AAA Certificates or Priorities.

These spreaders have all the characteristics required for profit-making spreading. They embody the latest spreading improvements. The extra-heavy-duty pintle type conveyor chain gives positive-feed for self-unloading. Will spread wet or dry lime uniformly from 35 to 45 ft. in width. Of heavy construction and reinforcement, they are built to stand hard usage.

Write today for our latest catalog showing the new model Wide Bottom, equipped with two distributor discs. This spreader will handle wet lime and marl and is strictly a one-man spreader.

***HIGHWAY EQUIPMENT COMPANY, INC.***

Manufacturers of the World's Most Complete Line of Spreaders, including Lime Spreaders, Sand and Cinder Spreaders, Chip Rock, Clay and Dirt Spreaders.

CEDAR RAPIDS, IOWA, U. S. A. • PHONE 32017-32018

You can do more in a "DAY"

SWING HAMMER PULVERIZER

Its wide crushing range makes it serve the purpose of two or more other types of crushers. Roller bearing equipped. Write for Bulletin.

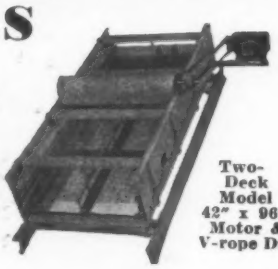
Brooks EQUIPMENT & MFG. CO.
KNOXVILLE, TENNESSEE

UNIVERSAL SCREENS

GUARANTEED to give you best results on your most difficult separations.

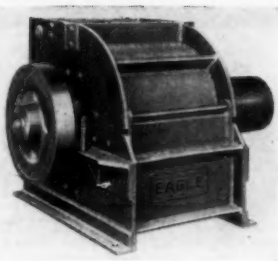
RUGGED - SIMPLE Construction. LOWEST in FIRST cost and MAINTENANCE cost.

Catalog No. 107,—32 pages on Screens and Screening is yours for the asking.



Two-Deck Model 42" x 96", Motor & V-rope Dr.

UNIVERSAL VIBRATING SCREEN CO.
RACINE - - WISCONSIN



This Crusher makes QUARRY WASTE go to work!

EAGLE LIMESTONE PULVERIZER and IMPACT BREAKER

Here's a unit which will boost your profit figures by converting rock dust — usually a total loss — into valuable agricultural fertilizer.

The EAGLE Pulverizer is dual-purpose, easily adjustable to produce agstone, or construction and road stone.

This is a low-cost machine, economical to operate and maintain. Several sizes available.

*Territory open for responsible distributors*

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EAGLE

JAW CRUSHERS
IMPACT BREAKERS
PULVERIZERS
CONVEYORS
LOADERS

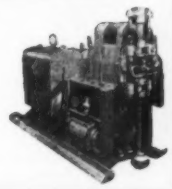
EAGLE CRUSHER CO., INC.
GALION, OHIO

ROTARY KILNS
GRINDING MACHINERY
for cement, lime, ores, etc.

F. L. SMIDTH & CO.
60 East 42nd Street New York, N. Y.

DIAMOND CORE DRILLING
*CONTRACTORS*

Fire Clays, Coal, Limestone
Gravel Deposits, All Minerals

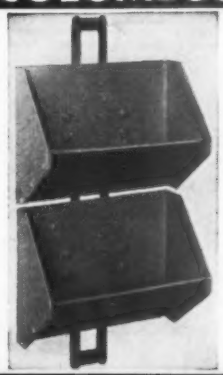


MOTT
CORE DRILLING CO.
HUNTINGTON, W. VA.

A Bucket... COLUMBUS... or a Plant

"COLUMBUS has the range" for all requirements of the concrete, cement, crushed stone, or sand and gravel producer.

We build completely equipped plants, or supply unit machines for every phase of material processing.



Consult COLUMBUS for Conveying, Elevating, Screening, Crushing, and Transmission Equipment.

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Some territory open for responsible representatives.

The Columbus Conveyor Co. Columbus 8, Ohio

CHEMICALS ATLAS EXPLOSIVES

*"Everything for Blasting"*

ATLAS
POWDER COMPANY
Wilmington • Delaware

# SCREEN SERVICE!

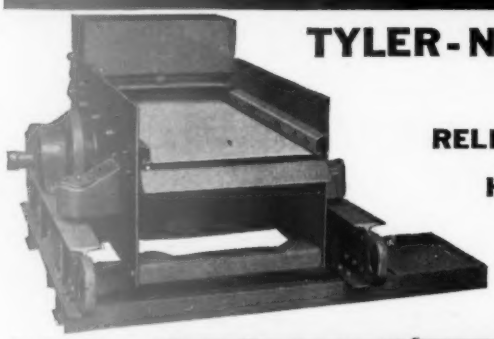
RUGGED, DURABLE AND ACCURATE
ALL METALS ALL WEAVES

*FOR ANY INDUSTRIAL APPLICATION*

**THE CLEVELAND WIRE CLOTH & MFG. CO.**
3574 E. 78TH STREET CLEVELAND, OHIO

**From the SMALLEST to the LARGEST TONNAGES**

**TYLER-NIAGARA SCREENS**
are
RELIABLE
HIGH CAPACITY
EFFICIENT
ECONOMICAL



2' x 4' Type 100 Tyler-Niagara Screen

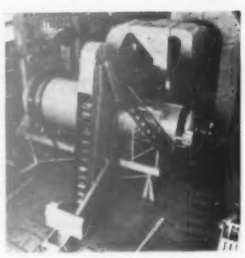
6' x 14' Type 900 Tyler-Niagara Screen

**THE W. S. TYLER COMPANY, Cleveland 14, Ohio**

**SIMPLICITY**

**ASPHALT PLANTS and INDUSTRIAL DRYERS**
combine the best in
DESIGN
MATERIALS
WORKMANSHIP
CAPACITY
PORTABILITY
ECONOMY
to insure complete

**DEPENDABILITY**



*Write for Bulletin.*
THE SIMPLICITY SYSTEM CO.
Chattanooga, Tennessee

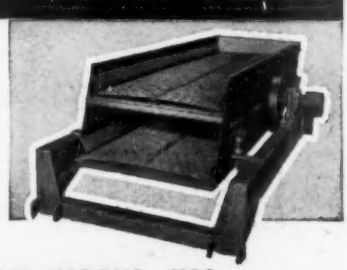
ROUND
SQUARE
SQUAROUND*
HEXAGON
**PERFORATED PLATE**
of every description
for maximum productiveness from your vibrating screens.
*Reg. U. S. Pat. Off.

HENDRICK MANUFACTURING CO.
39 Dundaff Street, Carbondale, Pa.
*Sales Offices in Principal Cities. Please Consult Telephone Directory.*

**DIAMOND BALANCED VIBRATORS**

DIAMOND

Violent vibration for fast, positive separation *all* over the screen—controlled by accurately balanced design for smooth action. Long life, low maintenance costs. No choking. Fast delivery. 11 Sizes in 1-2-2½-3-4 Decks. Tell us your needs. Write for Bulletin D42V.



**DIAMOND IRON WORKS, INC.**
AND THE MAHR MANUFACTURING CO. DIVISION
1801 NORTH SECOND ST., MINNEAPOLIS 11, MINNESOTA

**Condor RUBBER PRODUCTS**

BELTING
Conveyor, Elevator, Compensated, Transmission, Agricultural and V-Belts. Belting for every Service.

HOSE
Air, Acid, Contractors, Fire, Hydraulic, Oil and Gasoline, Steam, Sand Blast, Suction, Water, Spray and Special Hose. 81 Kinds for 81 Uses.

OTHER PRODUCTS
Chute Lining, Molded Rubber Goods, Industrial Brake Blocks and Lining, Rubber Lined Tanks, Rubber Covered Rolls — Abrasive Wheels, Bowling Balls.

*Keep Ahead with* **MANHATTAN**

**THE MANHATTAN RUBBER MFG. DIVISION**
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY

## FOR SALE

1—30 Ton Diesel Powered Standard Gauge Locomotive, 4 speeds forward and reverse. Standard couplers, Westinghouse Air Brakes and Worthington Air Compressor Model A-23. Manufacturer's rating: First gear 2½ MPH with drawbar pull of 15,000 lbs. Powered with Murphy Diesel Engine, 6 cylinder, water cooled.

1—50 Ton Baldwin Standard Gauge Coal Burning Locomotive, weight approximately 95,000 lbs. on Drive Wheels, Traction Force 21,500 lbs. Drive Wheels 50" diameter, wheel base 9'9". Boiler A.S.M.E. Maximum safe working pressure 180 lbs., 161 tubes 13'1" long x 2" dia., with safety valves. Tender capacity 6 tons coal, 4500 U. S. gal. water.

1—10 Ton Diesel Powered Standard Gauge Davenport Switching Locomotive, 4 speeds forward or reverse, closed type cab, Westinghouse Air Brake system, 4—24" side rod connected drivers. Manufacturer's rating 5,000 lbs. T. E. at 2.6 MPH. 2300 lbs. T. E. at 13 MPH. Powered with a Model D-8800 Caterpillar Diesel Engine, 4 cylinder, 5¾" x 8" with 2 Cylinder gasoline starting engine, 4 speed, Davenport, main transmission. Equipped with ARA Type Couplers, Westinghouse Type K-14-13 Air Brakes, Gardner Denver Air Compressor.

14—10 Ton Goodman 36" Gauge Storage Battery Mining Locomotives, 1939, 54" wheelbase, class "A" chassis. Mechanical brakes hand wheel control.

4—4 Ton Goodman 36" Gauge Storage Battery Mining Locomotives, 1938.

1—3 yd. Marion Electric Shovel, Ward Leonard Controls, Westinghouse M. G. Sets, 34' Shovel Boom, 23' Dipper Stick, 1940.

2—2½ yd. Marion Electric Shovels, Ward Leonard Controls, 31' Shovel Booms, 21' Dipper Sticks, with Dragline Attachment, 70' Lattice Boom.

2—2½ yd. Bucyrus Erie Model 75B Electric Shovels, Ward Leonard Controls, 29' Shovel Booms, 20' Dipper Sticks, with Dragline Attachment.

**BOX 35, NEW ROCHELLE, NEW YORK**
**NEW ROCHELLE 2-7680**

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1—Buda Power Unit, 50 H.P., Model YRA
1—Simplicity 3' x 8' three (3) deck Vibrating Screen
1—Single Drum Hoist, 35 H.P., Waukesha Engine
1—1500 Watt Kahler Portable Gasoline Lighting Plant
1—⅝ cu. yd. Blaw-Knox Clamshell Bucket
2—¾ cu. yd. Owen Type K, Clamshell Buckets
2—1 cu. yd. Owen Type K, Clamshell Buckets
2—9" x 16" Cedarapids Jaw Crushers
1—8" x 24" Universal Crusher, portable and bucket conveyor
1—10" x 20" Allis Chalmers Blake Type Jaw Crusher
2—10 Ton Huber 3 wheel gas rollers
1—5S Rex Mixer, Single angle, pneumatic tires, Wisconsin engine
1—Shovel front for 10-B Bucyrus-Erie
1—Schramm Fordair 60 Compressor
1—Ingersoll-Rand 160 Compressor, 2 stage, Waukesha Engine, 4 pneumatic tires
1—2 Ton Caterpillar tractor with rubber cover plates
1—5 Ton, 3 wheel Good Roads Gasoline Roller
1—24" x 40' Barber-Greene Portable Belt conveyor with 5 H.P. Electric Motor, steel wheels
1—2½ cu. yd. Hayward Class "G" Clamshell bucket
1—4 cu. yd. Hayward Class "G" Clamshell bucket.

• • •

**YATES MACHINE WORKS**
**115 Main Street**
**ROCHESTER, MICHIGAN**

---

## FOR SALE

Diamond Dual Portable Crushing Plant complete with 936 roller bearing jaw crushers, roll crushers, vibrating screens, 24" feeder conveyor and discharge conveyor, mounted on six roller bearing steel wheels and powered with Waukesha motor.

**THE W. T. WALSH EQUIPMENT CO.**
**3088 West 105 St.**
**Cleveland 11, Ohio** **ORchard 4400**

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1—Browning Elec. Crawler Crane, 55' boom, 1 yd. Bucket, 100 HP Motor 220-440 v.
1—300,000# cap; Buffalo Railroad Scale with dead rail, 56', recording beam.
1—12 x 23" G. R. Macy Co. Jaw Crusher.
2—Bucket Elevators, 8 x 14 & 9 x 18" on chains.
1—125 HP Motor with outboard brg. Lincoln, 780 RPM., 440 v. Starting eq.
400—2 deck Drier Cars, 30" ga.
500' 3 & 4" Pipe, pumps, motors.
3 Sets Truck Scales.

**McCARTNEY MACHINERY CO.**
**Box 35 S.S., Youngstown, Ohio**

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(8) Euclid 10 yd. Diesel Rear Dump Trucks.
120-B. Bucyrus-Erie, 4 yd. Electric Shovel.
43-B. Bucyrus-Erie, 1¾ yd. Shovel. Late model.
2 ft. & 3 ft. Symons Cone, rebuilt with or without tex-rone electric motor.
7" A. C. Newhouse Reduction Crushers.
Brocks Load Luggers, latest model CH-200, 2 yd. buckets. Practically new. $750.00.
72" x 18 ft. Lippmann Scrubber Screen with motor.
4 ft. x 10 ft. Lippmann Triple Deck Vibr. Screen.

**M. WENZEL, 2136 Jefferson, Kansas City, Mo.**

---

### COMPRESSORS

231 CFM Type ER-1 Ingersoll Rand, complete with 75 H.P. 3/60/2200 V motor
308 CFM Type ER-1 Ingersoll Rand, complete with 75 H.P. 3/60/2200 V motor
368 CFM Type NSB Chicago Pneumatic horiz., complete with 60 H.P. G.E. 3/60/440 motor
515 CFM Type XB 2 Ingersoll Rand, complete with 100 H.P. 3/60/2200 V motor
518 CFM Type XCB Ingersoll Rand, with 100 H.P. slip ring motor
526 CFM Ingersoll Rand, Style "J"
888 CFM Ingersoll Rand, Type XB horiz. compound 2-st.
940 CFM Ingersoll Rand, 10 horiz. 2-st. steam-driven, with receiver

### CRUSHERS

24" x 54" Superior Crushing Rolls
No. 3 and No. 6 McCully Gyratory

### LOCOMOTIVES

1—6 ton Milwaukee, 36" ga., gasoline
1—7 ton Milwaukee, 36" ga., gasoline
1—9 ton Whitcomb, 36" ga., gasoline
1—30 ton Mack, diesel-electric, std. ga.

### SHOVELS — CRANES & DRAGLINES

No. 2 Koehring 3-way comb. crane, dragline & shovel
Model 77 Lorain comb. crane, dragline & shovel, 1½-yd. cap.
Model 780 P&H Dragline, 75' boom, 2-yd.
320-B Bucyrus Stripping, 6½-yd. cap.
Model 54-B Bucyrus Dragline, 70' boom with light plant, powered by Buda diesel engine
Model 80 Northwest Dragline, 70' boom, powered by Twin City oil engine

### TANK & TOWER

60,000 gallon Water Tank on 89'9" tower, with 10" riser pipe.

### TANKS, Storage

All capacities — Expertly rebuilt!

### TRACTOR WAGONS

7, 7 cu. yd. Allis Chalmers Speed-Ace
(Write for illustrated bulletin)

**IRON & STEEL PRODUCTS, INC**
**13490 S. Brainard Ave., Chicago 33, Illinois**
*"Anything containing IRON or STEEL"*

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1—Link Belt Portable Bucket Loader Powered by 4 cyl. Continental Engine.

**DELANEY EQUIPMENT COMPANY**
**15 East Seven Mile Rd., Detroit 3, Michigan**
**Telephone Townsend 9-2240**

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## DIESEL GENERATORS

1—Diesel Generator Set, 300 HP., Fairbanks-Morse Diesel, 6 cylinder, Model 32, complete with auxiliaries, 257 RPM., direct connected to a 250 KVA Fairbanks-Morse Generator.

## AIR COMPRESSORS

1—Ingersoll-Rand Duplex Air Compressor, Type XB, 582 cu. ft. motor driven.
1—Ingersoll-Rand Imperial, Type XB-2, Duplex Air Compressor, 12"x7½"x12".

## COOLERS AND DRYERS

1—7'x56'; 1—3½'x40'; 1—10'x90' and others.

## CRANES AND SHOVELS

1—P & H 1-yd. Shovel, Gasoline, Reconditioned.
1—Locomotive, 4-wheel, 10-ton, 25' boom, Brown Hoist Co.

## CRUSHERS

2—No. 5 Gates Gyratory Crushers, Style D.
Others—various types and sizes.

## CEMENT KILN GUNS

2—Remington Arms Cement Kiln Guns.

## HOISTS

1—S. Flory Mfg. Co. single drum Hoist. Handles 11 ton car up 12% grade 500 ft. per min.

## KILNS

1—8x9½x180 ft.
And others.

## LOCOMOTIVE AND CARS

1—4-ton Vulcan Iron Works, Class AW-4, Worm Gear Gasoline Locomotive, 36" gauge.
6—5-yd. Koppel 2-way Dump Cars, 36" gauge.

## DRILLING EQUIPMENT

1—No. 33 Ingersoll-Rand Leyner Drill Sharpener.
1—Improved Type No. 22 electric power Loomis Machine Company Clipper Drill, complete with motor.
2—Ingersoll-Rand DCR No. 430 Drills.
2—Denver-Gardner Co. (Turbo-Waugh) No. 37 Drills.
4—Denver-Gardner Co. (Denver-Waugh) No. 95 Drills.

## FEEDERS

2—Bailey Pulverized Coal Feeders, Type No. 2, complete with steel hoppers, 8½" ft. dia. x 12 ft. cone bottom. ¼

## GRINDING EQUIPMENT

2—5½'x22' Allis-Chalmers Tube Mills.
3—5½'x20' F. L. Smidth Tube Mills. Silex Lined.
1—5'x22' Tube Mill.
1—5'x10' Tube or Ball Mill.
1—4-roll Raymond Mill.
3—Giant Griffin Mills.

## ELECTRIC MOTORS AND MG SETS

Large stock, rebuilt, AC or DC. 25 and 60 cycle.

## SYNCHRONOUS MOTORS

1—1900 HP., 25 cycle, 2300 V., 150 RPM.
2—1250 HP., 25 cycle, 2300 V., 150 RPM.

## AIR SEPARATOR

1—14 ft. Sturtevant Air Separator. New 1941.

## TRACK SCALE

1—Homestead (Carnegie-Illinois Steel) Standard Track Scale, 46'-100 ton capacity. Complete.

## TANKS

1—6700 bbl. capacity Oil Storage Tank.
Others up to 55,000 bbls.

## TURBINE

1—100 HP Westinghouse Turbine, 2700 RPM, direct connected to 100 HP, Westinghouse Gear Reducer. Ratio 3 to 1.

**WEBBER EQUIPMENT CO.**
**17 East 45th St. MU. 2-6511**
**NEW YORK 17, N. Y.**

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## FOR SALE

2—135 K.W., AC Generators, direct connected to Fairbanks Morse Diesel engines

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**MERTES MACHINERY COMPANY**
**1622—So. 1st St., MILWAUKEE, WIS.**

---

### NORTHWEST 1-YD. SHOVEL-CRANE

Northwest Model 105, with 70' boom, with or without shovel attach., late style crawlers, Model C Twin City Engine. Machine completely dismantled and all badly worn parts replaced in our shop.

**CONSTRUCTION EQUIPMENT CORP.**
**2404 W. Clybourn St., Milwaukee 3**

**FOR SALE**

2' Symons Cone Crusher: overhauled July 1944. Optional, texrope drive and 50 h.p. motor.

**WAUKESHA LIME and STONE COMPANY**
**Waukesha, Wisconsin**

## FOR SALE

1—25 Traylor Gy. Crusher.
1—18" Belt Conveyor W/Belt 52 ft. long
1—Universal Rev. Screen 3' x 15'
1—Worm speed reducer Ratio 27:1. Shafts 2 15/16" —1 15/16"
1—24 ft. Boom only for 105 N.W. Shovel front

**Heller Stone Co.** **Bluffton, Indiana R2**

**FOR SALE**

1—10" AMSCO pump 12" suction, directly connected to 250 HP Electric Motor, 505 RPM, 440 Volts, 60 Cycle, with Starter, Grids and Controls.

1—Set Webb City Crushing Rolls, 16" face 42" Diam. with 6' Heavy Flywheel, Manganese Tires. Also extra set Cast Iron tires new. New Bearings and completely overhauled since used.

**LYNN SAND & GRAVEL CO., AVALON, MISS.**

For Sale. One 40 ton American Locomotive, Standard gauge, air equipment, retubed 1943.

**PENN ALLEN SLAG COMPANY**
**B. and B. Building**
**Allentown, Pennsylvania**

FOR SALE—1 **Gas Buda Motor** with clutch. 125 H.P. at 1000 R.P.M. In good condition. Price $1100.00 f.o.b. loading point.

FOR SALE—1 **Hardinge Rod Mill**, 4' by 8' with V-Belt Drive. In good working condition. Price $1500.00 f.o.b. loading point, without motor.

**DECKERS CREEK SAND COMPANY**
**P. O. Box 186, Dial 3129, Morgantown, W. Va.**

**GOOD VALUES — ALWAYS**
24x18" and 36x18" American Hammermills.
35 Ton Plymouth WLG Gaso. Locomotive.
80 HP to 550 HP Diesel Engines.
20 Ton American Steel Guy Derrick.
35 HP Clyde 2 drum swinger Gas Hoist.
1 Yd. P&H 600A gas crane and dragline.
35 Ton Steam Locomotive Crane.
80, 150, 250 HP HRT Steam Boilers.

**MISSISSIPPI VALLEY EQUIPMENT COMPANY**
513 Locust Street **St. Louis 1, Missouri**

## For Immediate Sale

7 ½ Symons Gyratory Crusher
Can see it in operation

**Rockledge Products Company**
**Portland, Indiana**

**FOR SALE**

1—340 KVA AC Generator dir. con. 4-Val. Eng.
1—25 KVA AC Generator dir. con. Vert. Eng.
1—50 KVA AC Generator dir. con. Engine.
1—28 Northwest Dragline; 65 HP Loco. Boiler.
6—520 HP, 200# P. Heine W.T. Boilers.
1—30 Ton Overhead Elec. Traveling Crane.
1—100 KVA AC Generator dir. con. Full Diesel.
6—4000 Gallon Oil Storage Tanks—Line new.

**H.&P. MACHINERY CO.**
**6719 ETZEL, ST. LOUIS, MO.**

**FOR SALE**

Two Besser Super K Tampers
Two 40 Cu. Ft. mixers
6000 Steel Pallets
10x16—4 Roll New Holland Crusher
Vibrating Screens
Rail—block cars and transfer

**MULTIPLEX CONCRETE CO. INC.**
**East Orange, N. J.**

**LOCOMOTIVE CRANES**
**8-wheel, steam**
15 ton Brownhoist, 50' boom.
20 ton Industrial, 50' boom.
25 ton Browning, 50' boom.
30-40 ton Brownhoist, 50' boom.
35 ton McMyler, Type "J" 50' boom.

**IRON & STEEL PRODUCTS, INC.**
**13490 S. Brainard Ave., Chicago 33, Illinois**
*"ANYTHING containing IRON or STEEL"*

### CRUSHERS, ROLLS, MILLS

ACME 6"x21" type C jaw crusher, roller bearings
Buchanan 10"x16" Blake type jaw crusher
New England 11"x20" jaw crusher, cast steel frame
Scholl 9"x16" jaw crusher, heavy cast frame
Traylor "BULLDOG" 11" gyratory crusher
Sturtevant No. 0 Rotary Fine crusher
Buchanan 2 roll crusher, 30"x14", C
Robins double roll 24"x30" coal crusher
Single roll 24"x24" spiked crusher
Simplex coal pulverizer with roller bearings
Williams #2 hammermill
Mid-west #2 hammermill
Eight tons of steel balls, 1" to 2"

### BUCKET ELEVATORS & CHAIN

Chain elevators, 6", 18" and 20" buckets
Elevator casing, 16"x58" of ¼" plate
Continuous 12"x42' bucket elevator on belt
Continuous 14"x42' chain bucket elevator
Continuous 14"x50' chain bucket elevator
Continuous 30"x40' double chain bucket elevator
Grain elevators, with 5" to 18" buckets on belt
Link Belt chain barrel elevator
500' of Pindle chain #730
500' of Jeffrey 126 D1—left & right chain
360' #3 Champion Oilwell chain
300' Jeffrey #1123 roller chain
400' of #78 chain with Salem buckets, 5" & 8"

### VIBRATING & REVOLVING SCREENS

Robins "GYREX" double deck 4'x10' screen
Simplicity three deck 3'x6' vibrating screen
PLAT-O single deck 3'x6' vibrating screen
Jigger three deck 2'x5' vibrating screen
Hummer single deck 3'x5' vibrating screen
Hummer single deck 4'x5' vibrating screen
Generator for Hummer screens
Revolving screens: 4'x16' and 4'x22'

### CONVEYORS

Conveyor 23"x96' with steel-belt
Jeffrey all steel foundry conveyor, 42"x150'
Jeffrey 24" Standard Steel Apron Feeder, 35'
Link Belt single flight conveyor, 15"x56'
Flat steel-plate conveyor, 47"x25'
Haiss 14"x24' Portable flat belt conveyor
Belt idlers and conveyor belt
Belt conveyor pulleys for 12" to 42" belt
Belt trippers for 14", 16", 18", and 24" belt
Weller 36" horizontal automatic take-ups
Screw conveyors 12" and 16" flights

### MISCELLANEOUS

Lidgerwood single drum 15 hp electric hoist
National double drum 25 hp electric hoist
Sauerman double drum 50 hp electric dragline
Chicago belted air compressor, 529 CFM, NSB.
Electric Motors from 1 to 100 hp
Morris 6F manganese lined sand pump
Ellicott 4" belted sand pump
Worthington 4" centr. pump with 25 hp motor
Two 6" centr. 15 hp electric vertical pumps
4 ton and 8 ton 36" gauge gasoline locomotives
20" and 24" flat cars
400 hp V-belt double pulley drive with V belts

### Stone Working Equipment

2 Meyers stone saws, 48" and 60" dia. Late type
1 Lincoln open side electric planer, 42"x12'
2 Lincoln open side electric planers, 36"x12'
1 Patch 36"x12' open side belted planer

**G. A. UNVERZAGT & SONS**
**136 Coit Street, Irvington, New Jersey**

DIESEL COMPRESSOR—Worthington 315 ft. air-cooled, two-stage, Hercules diesel engine, portable, 1942 model.
TRACTOR-PIPE LAYER—"Caterpillar" RD6 with Cardwell sideboom.
DIESEL ENGINE—180 HP Fairbanks-Morse, Model 32E12, 360 RPM, 1942 model; used only 1500 hours.
DUMPTORS—Koehring (3) six-yard diesel; A No. 1 condition; rental only.
MOTOR GRADER—(5) "Caterpillar" $12 Diesels; rent only.
AIR COMPRESSOR—Stationary, belt driven, Gardner-Denver, 420 ft. displacement; bargain.
PRIMARY CRUSHER with grizzly feeder—Pioneer 24x36" roller bearing—Feeder 40"x10'—new 1942—A No. 1; guaranteed.
POWER UNIT—Gasoline, six-cylinder, Wisconsin D2, 105 HP, 1000 RPM; rebuilt.
VIBRATING SCREEN—New Seco, HS, with electric motor, double deck, 4x8.
GASOLINE ROLLER—Galion, 3-wheel, four-cylinder; bargain.
TANDEM ROLLER—Gasoline, Buffalo-Springfield, 5-ton.
SAW TABLE—Beach, rip and cut-off with 6 HP Wisconsin engine.
LE TOURNEAU SCRAPER—Model X, 4½ yard, cable control.
AUSTIN-WESTERN—Scraper, four-wheel, cable type; 4-5 yard.
GASOLINE ENGINE—Waukesha, four-cylinder, 80-90 HP, Model WS16F.

**ROY-C-WHAYNE SUPPLY COMPANY**
**800 W. Main St., Louisville 2, Kentucky**
**Ph. WAbash 1375**

**DEPENDABLE USED MACHINES**
**SPECIAL—BUCYRUS ERIE 43B, 1¾ YD. GAS SHOVEL, BUILT 1937**

75 ton steel bins
Sirocco No. 60 blower
Cat. 30 bulldozer
2 yd. Koppel cars, 36 in. belt conveyors and parts
10x20 portable crusher
Byers 1 yd. dragline
Speeder ⅜ yd. dragline
Gas engines 35 to 125 HP
Pioneer Duplex gravel plant
Williams No. 6 Hammermill
Link Belt bucket loader
4 ton Vulcan locomotive
42x60 Robins screen
36 in. ga. sectional track

**TRACTOR & EQUIPMENT COMPANY**
**3506 W. 51st Street** **Chicago 32**

### CARS

10—20 yd., all steel, air dump, standard gauge.

### CRANE

1—Universal model 35, 28' boom, ½ yd. capacity, 45 H.P. gas motor.

### CRUSHER—JAW

1—Traylor 36 x 42 with or without Pan Feeder.

### CRUSHER—REDUCTION

1—Traylor 4 ft., type TY.

### DIESEL MOTORS

2—Cummins 200 H.P., supercharged Diesel Motors for use in Euclid and other similar heavy trucks.

### LOCOMOTIVES

1—Lima 80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery. For sale or rent.
1—Baldwin and 1—American, 6 wheel, Switchers with tenders, 70 and 80 tons capacity, ASME code boilers.
1—Milwaukee 12 ton, gas, standard gauge.

### MINE HOIST

1—Allis Chalmers, single drum, 600 H.P., A.C., 2300 volts, drum 96" x 118" face, 2550 ft. 2¼" rope, operating in balance, with all modern safety features.

### PUMPS

4—Two stage centrifugal, high speed, ball bearing, direct to 350 H.P., 2200 volt, 3 phase, 60 cycle, cap. 1070 GPM @ 1000 ft. with across-the-line starters.

### VIBRATOR SCREEN

1—Traylor FB—4 size 47" x 84" with generator.

### SHOVELS & DRAGLINE

1—Marion 4 yd. Electric, model 4160, full revolving, crawler tread, Ward Leonard control equipment, late type crawlers; perfect condition. Located in Minnesota.
1—Northwest model 80, 2 yd. capacity, gasoline.
1—Link Belt K-55, 2 yd. Dragline, diesel operated.

### TRUCKS

4—Euclid 18FD, end dump, 15 tons capacity, 200 H.P. Cummins supercharged diesel motors; guaranteed condition.

### LOG TYPE STONE WASHERS

2—Eagle Log type Stone Washers 7' x 30' steel tub, 36" dia. paddles.

### WELL DRILL

1—Armstrong 29-T electric, crawler mounted, 220/440 volt, complete with cable tools, etc.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS & KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

**WE WILL BUY ANY MODERN PIECE OF EQUIPMENT ANYWHERE**

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**Lansdowne Theatre Building, LANSDOWNE, PA. Philadelphia Phone: Madison 8300**

## AVAILABLE

1—⅜ Yd. Model OB BUCKEYE Crane.
1—¾ Yd. Model 400 P & H Crane & Dragline.
1—1¼ Yd. Model 75A Lorain Shovel.
1—20 Ton BROWNING Loco. Crane.
1—20 Ton LINK-BELT Loco. Crane.
1—Model 2 NORTHWEST Shovel Attachment.
1—Model 35 LORAIN Backhoe Attachment.
1—½ Yd. OWEN Bucket, Rebuilt.
1—¾ Yd. McMYLER Bucket, Good.
1—10x16 UNIVERSAL Jaw Crusher.
1—12x24 GOOD ROADS Jaw Crusher.
1—150 Ton Steel Bin, stationary type.
1—8-ton 36" PLYMOUTH Locomotive.
1—36"x11' GOOD ROADS Rev. Screen and 16"x49' Belt Conveyor & Hopper. Both with motors. Ideal for sand screening.
1—Complete Sand & Gravel Plant in Western Pennsylvania. Doing good steady business. Ample deposit. Excellent opportunity. Write for details.

## WANTED AT ONCE

1—½ Yd. Shovel & Backhoe.
1—1½ Yd. Diesel Stripping Shovel.
1—24x36 Farrell Jaw Crusher.
1—150 Ton Steel Bin.
2—75 Ton Steel Bins.

**PATTERSON EQUIPMENT COMPANY**
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### AIR COMPRESSORS
**BELTED:** 355, 528, 676, 1000, 1300 & 1570 Ft.
**ELECTRIC:** 478, 676, 807, 1302, 1722 & 2850 Ft.
**DIESEL:** 105, 315, 420, 603, 807 & 1000 Ft.
**PORTABLE GAS:** 110, 160, 220, 310, 540 & 1300 Ft.
**STEAM:** 49, 310, 528, 1300 & 2200 Ft.

### GRAPPLES & BUCKETS
50 Skips and Battleship Type, 2 to 8 Yds.
5 Owen & Bucyrus Rock Grabs.
**CLAMSHELL:** ½, ¾, 1, 1½ & 2 Yds.
**ORANGE PEEL:** ¾, 1, 1½, 2 & 3 Yds.
**DRAGLINE:** ½, ¾, 1, 1½ & 2 Yds. Cap.

### CRANES & DRAGLINES
5 Ton BROWNHOIST. 30 Ft. Boom Gas.
12 Ton NORTHWEST 50 Ft. Boom Gas.
12 Ton KOEHRING 45 Ft. Boom Gas.
16 Ton Speedcrane, Gas, 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2 Yd. Monighan Electric 60 ft. Boom Dragline.
3 Yd. Monighan Diesel Dragline.
5 Yd. Monighan Diesel Dragline.

### CATERPILLAR SHOVELS
½ Yd. P. & H. Gas & ⅜ Yd. Insley Gas.
¾ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1½ Yd. BUCYRUS 41B Steamer.
1½ Yd. Lima 750 Diesel.
1½ Yd. KOEHRING 601—Gas.

### DUMP CARS
46—KOPPEL, 1½ Yd., 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Sd. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

### BALL, ROD AND TUBE MILLS
6x8 Continuous Pebble Mill.
5x5 Batch Mill.
5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

### PULVERIZERS
No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

### SEPARATORS AND COLLECTORS
14 ft., 8 ft. and 12 ft. Separators

### ROLL CRUSHERS
36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

### JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 60x42, 84x66, 36x16, 9x36.
30x10 Gruendler Roller Bearing.

### CONE & GYRATORY CRUSHERS
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
21K & 18N Allis Chalmers.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T, Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft., 4 Ft., 3 Ft. and 2 Ft. Symons Cone.

### DRILLS
4—SANDERSONS 14 & LOOMIS 44.
7—Ingersoll-Rand Wagon Drills, FB & M2.
29T ARMSTRONG Well Drill.

### HOISTING ENGINES
7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8¼x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

### HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Greundler No. 6X.

### MIXERS—PAVERS
5—1 yd. 2 yd. & 3 yd. Mixers.
3—Ransome & Rex 34E Dual Drum.
5—Koehring & Smith 27E Pavers.

### ASPHALT EQUIPMENT
7—750 & 1000 Gal. Distributor Trucks.
3—1000 Lb. & 2000 Lb. Pug Mixers.
6—3, 5, & 10 Ton Asphalt Rollers.
5—½, 1, & 2 Ton Asphalt Plants.

### DIESEL ENGINES
60 HP Fairbanks Morse.
140 HP Fairbanks Morse.
200 HP Atlas.
225 HP Chicago Pneumatic

### DIESEL GENERATORS
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.
30 K.W. Buda 110 v.

### RAYMOND MILL
5 Roll High Side.

### CONVEYOR PARTS
**BELT:** 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
**IDLERS:** 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

### ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 70 Ft., 70 In. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

### STEEL DERRICKS
**GUY:** 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
**STIFF LEG:** 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

### LOCOMOTIVES
**DIESEL:** 7—4½, 8 and 15 Ton 36 x42 In. Ga.
**GASOLINE:** 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
**STEAM:** 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
**ELECTRIC:** 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

### SCREENS
**VIBRATING:** 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS, LINK BELT & HURON.
**REVOLVING:** 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

### STEEL STORAGE TANKS
35—4000, 5000, 6000, 8000, 10000, 15000 and 20000 gal. cap. Horizontal and Vertical.
6—2500, 5000 and 10000 bbl. Vertical.

### RAILROAD CARS
20—8000 gal. cap. Tank Cars.
12—50 Ton Cap. Battleship Gondolas.
7—50 Ton Cap. Flat Cars.

### SAUERMAN DRAG AND SLACKLINES
1— ¾ yd. Gas 1—1½ yd. Electric
1—1 yd. Electric 3—2 yd. 3 yd. & 4 yd. Electric

### R. R. TRACK SCALE
125 Ton 56' x 10'6" Platform 4 Section.

### WHIRLEY CRANES
5 Clyde 75 to 100 Ft. Boom.

### DRILL SHARPENERS
5 I.R. 4K Shank Grinders.
6 Ingersoll-Rand 54, 40, 50 & 34's.
7 Sullivan Class A, & C.
8 Gardner-Denver 3A & No. 6DS.

### MINE LOADERS
5 Eimco, GD, & Conway.

(Cable Address: "STANEQUIP" New York)
Lincoln Bldg., 60 E. 42nd St., New York, N. Y.
Murray Hill 2-3075 or 2-3076

**R. C. STANHOPE, INC.**

1—93 HP Hercules Model TXO, 4-cylinder, heavy duty, gasoline power unit with electrical starting equipment, completely rebuilt.

1—35 HP Wisconsin Model SU, 4-cylinder, gasoline power unit, completely rebuilt.

**JOHN REINER & COMPANY**
12-12 37th Avenue Long Island City, N. Y.

### LOCOMOTIVES
1—6-Ton Gas Locomotive, 36" Ga., Milwaukee Locomotive Works
1—9-Ton Gas, 36" Ga., Whitcomb
2—25-Ton 0-4-0 Porter Saddle Tank Locos. Oil burners; A. S. M. E. Code, Excel. Cond.
2—43-Ton Baldwin-Westinghouse Electric Locomotives, 600 Volt D.C.
1—50-Ton 0-6-0 Vulcan Locomotive
1—60-Ton Westinghouse Electric Locomotive, 550 volt D.C.
1—65-Ton 2-6-0 Mogul Loco. Oil-burning
1—70-Ton 0-6-0 Baldwin Switching Loco. ICC condition.
1—70-Ton Gas-Electric Locomotive
3—80-Ton 0-6-0 Lima Switching Locos. T/E 35, 300#. Built 1925 and 1927.
Other Locomotives, Too

**IRON & STEEL PRODUCTS, INC.**
39 years' experience
*"ANYTHING containing IRON or STEEL"*
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### LOCOMOTIVE CRANES & LOCOMOTIVES
85 Ton American Switcher
50 Ton Industrial Crane
35 Ton McMyler Crane
25 Ton Industrial Crane
25 Ton Browning Crane
22 Ton Ohio Crane
15 Ton Ohio Crane
12 Ton Gas Crane
20 Ton Electric Locomotive
18 Ton Gas Loco. S.G.
30 Ton Loco. Steam S.G.
25 Ton Loco. Steam S.G.
40 Ton Loco. Steam S.G.
50 Ton Loco. Steam S.G.
57-67 Ton Loco. Saddle Tank
60 Ton Elec. Loco. Batt. Type S.G.
40-45-50 Ton Loco. All Elec. S.G.
65 Ton Switching Locc.
70 Ton Shay Geared Loco.
120 Ton Locomotive 0-8-0
50 to 75 Ton Stiff leg Derrick

### TRUCK CRANES
½ yd. Orton

### SHOVELS—CRANES—CRAWLERS
5 ton Overhead DC 29' 4" span
2 yd. 50-B Bucyrus-Erie Crane, Steam—Diesel
2 yd. Page Model 411 Walker
1½ yd. Marion Shovel, Model 362
1¼ yd. McMyler Crawler Crane
1¼ yd. Northwest Dragline No. 104
1 yd. Byers Master Crane-Shovel
½ yd. Byers Bear Cat Model 27 Crane
⅜ yd. Insley Type C Shovel
Shovel front for Bay City 25

### TRACTORS
Allis-Chalmers L with B/D
Caterpillar "50" Diesel
Caterpillar "50" Gas with angledozer
Caterpillar 22 with Winch & Boom

### MISCELLANEOUS
Car-Twin Hopper S.G. 50 Ton
25,000 Gal. Steel Tanks
2½ yd. Hayward Rehandler Clam. Bucket
4 yd. Hayward Rehandler Clam. Bucket
2 yd. Brownhoist Coal Handler Clam. Bucket
210 H.P. Diesel Motor
1¼ yd. Owen Reh. Bucket
100 HP 3 Drum Elec. Hoist
Generator Unit—Diesel—48 KW
70 Ton Circular Bin

**R. J. Stone** **Ray S. Betham**

**"STONE — the CRANE MAN"**
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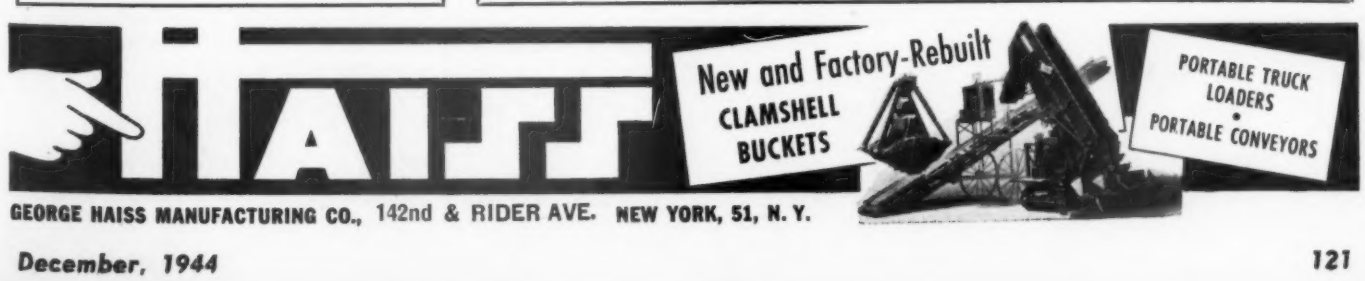
PHONES: Randolph 6156-4065



**FOR SALE**

Dolomite, limestone, limestone beach gravel for purifying iron ores, road material, concrete and magnasite. Drummonds Island, Chippewa County, Michigan.

**W. F. Cooper, 306½ N. Washington Ave., Lansing 30, Michigan**

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Available: DIESEL Engines
COMPRESSORS, TRACTORS
Asphalt Extruder, almost new.

**STEPHEN A. DOUGLASS CO.**
**630 Fort Washington Avenue**
**New York 33, N. Y.**

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¾ yd. Bay City crawler crane, gas.
25 ton Browning 8-C, locomotive crane, steam.
40 ton gondola cars, for plant usage.
Euclid 10 yd. Rear dump trucks, diesel 4 yd. Electric Shovel, Bucyrus-Erie.

**ALLSTATES EQUIPMENT COMPANY**
343 S. Dearborn Street Chicago 4, Illinois
Phone: Harrison 1821

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**FOR SALE**

1 Only 4 Mold Berg Brick Press
Excellent Condition, Attractive Price

**SHEEHAN & COMPANY**
**303 Cotton Ave., El Paso, Texas**

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FOR SALE: 1000 ft. of 10" 1d rubber covered suction hose, in 10' lengths, with nipples on each end, 7-ply reinforced, mfg. by Republic Rubber Co. new and unused, located South Carolina. Write or wire

**Baron Iron & Equipment Co.**
**P. O. Box 601, Chattanooga, Tenn.**

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FOR SALE: Lime Plant—Southern Indiana. Five (5) vertical kilns with equipment; good condition. Fifty-five acres land; unlimited deposit High Calcium Colitic Stone; also stone suitable for manufacture of Rock Wool.

Box 1235, c/o Pit and Quarry
538 So. Clark Street Chicago 5, Illinois

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**WANTED**

150—Chase Style 294 Hinged-deck Lift Truck Racks for Cement Blocks.
Also 1 Clarke Concrete Products Truclift to handle Racks of Blocks.

**LOUIS FOSTER'S LUMBER & BUILDERS SUPPLIES**
Port Huron, Michigan

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**WANTED — IN GOOD CONDITION**

½ yd. Shovel and Backhoe
¾ yd. Shovel and Backhoe
D-4 Tractor, or equal
Trailer for ¾ yd. Shovel

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**B-G EQUIPMENT COMPANY**
**700 Hollenbeck St., Rochester 5, New York**

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**WANTED**

TRACTORS, CRANES, SHOVELS AND TRUCKS, LATE MODELS FOR EXPORT SHIPMENT. CASH WAITING.

**P. O. BOX 35**
**NEW ROCHELLE, NEW YORK**
**TEL. NEW ROCHELLE 2-7680**

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**WANTED**

2 bag mixer for a block plant, 18 to 24 cu. ft.

**FRED RADANDT SONS**
R3 Manitowoc, Wisconsin

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**ELECTRICAL MACHINERY**

**Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully Guaranteed. Send us your inquiries.**

V. M. NUSSBAUM & CO., Fort Wayne, Ind.

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**SITUATION WANTED**

Quarry Superintendent. 26 years experience in quarrys and plants producing from two hundred tons per hour up to seven hundred tons per hour. Experience in most all types of crushing equipment and shovels.

**BOX 1240, c/o PIT AND QUARRY**
**538 South Clark St., Chicago 5, Illinois**

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**WANTED**

One—½ Yard shovel, front or backhoe attachment.

One—T 9 or TD 9 International bulldozer.

**ACME SAND & GRAVEL COMPANY**
**1330 Raff Road, S. W. Canton (4), Ohio**

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**WANTED**

3—Pneumatic tired trucks equipped with 15 ton Easton side dump bodies.
1—1½ yd. Diesel dragline, rock dipper cat. mtd.
3—5 to 6 yd. dump trucks.
1—4 or 5D Bulldozer.
1—7x15 Marcy Rod mill.
1—25B Telsmith Gyratory Crusher.

**R. E. BOGGS**
**1427 South 18th Street, Birmingham 5, Alabama**

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*Quarries*
*Crushing Plants*
*Cement Plants*
*Storage Methods*
*Operating Costs*

**E. Lee Heidenreich, Jr.**
***Consulting Engineer***
**Route No. 1, Newburgh, N. Y.**
**Phone 3677-M**

*Operation*
*Plant Layout*
*Design*
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*Appraisals*

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**Chemist — Cement**

Chief Chemist—Cement plant South America—knowledge of Spanish not necessary but advantageous. Good salary. Prefer single, under 50 yrs. **P. O. Box 286, Church Street Annex, N. Y. C.**

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**POSITION WANTED**

College Graduate with C E and M E Degree with fourteen years as Construction Supt. and six years Production Manager of large quarry operation, Ready Mix Concrete plant and Building Material Warehouse. Desires position as Construction Supt., Project Manager or Production Manager on Construction work or quarry operation.
Age 44, married, settled. Salary open. Draft status clear 4A.

Box 1135, c/o Pit and Quarry
538 So. Clark St. Chicago 5, Ill.

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**WANTED**

Executive with experience in grinding, tabling, drying, acid treating Silica Sand. Must be able to design and construct entire layout. Eastern State location. State fully your qualifications and remuneration expected. Your reply will be treated confidentially.

Write Box 1230, c/o Pit and Quarry
538 So. Clark Street, Chicago 5, Illinois

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**POSITION WANTED**

as Supt. of Crushing or Sand and Gravel Plant, 45 years of age, 25 years experience in erection and operation of plants. Prefer permanent position in Stationary plant, but will consider work out of the States.

Box 1225, c/o Pit and Quarry
538 South Clark Street Chicago 5, Illinois

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**Experienced Superintendent** wanted immediately for stone quarry in central west. About 600 yards per day, year around permanent job.

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**Box 1245 c/o Pit and Quarry**
**538 South Clark St., Chicago 5, Ill.**

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**Royal E. Burnham**
**Attorney at Law**

**Patent and Trade-Mark Causes**

**511 Eleventh Street, N. W.**
**WASHINGTON, D. C.**

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**CORE DRILLING**
**TEST BORING**
**Dundee Engineering Company**
**Dundee, Illinois**

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**CORE DRILLING**
ANYWHERE
*We look into the earth*
**PENNSYLVANIA**
DRILLING COMPANY
PITTSBURGH, PA.

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**WANTED**

1 yd. or 1½ yd. gas or diesel
**CRANES, DRAGLINES & SHOVELS**

**Hawkins & Company**
**124 So. Michigan Ave. Chicago, Ill.**

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**"Concrete Technician" Wanted**
**To work in midwest.**

Large cement manufacturer offers opportunity to engineer with experience in cement and concrete field. Position requires practical experience in construction, design and control of concrete mixtures, and ability to promote and sell various types of cement. Permanent position with progressive organization for energetic, sales-minded engineer. State education, experience, age and salary wanted. Our personnel has been advised of this advertisement.

**Write Box 1205, Pit & Quarry Publications**
**538 South Clark Street, Chicago 5, Illinois**

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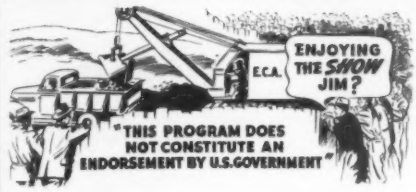
Wanted: Two Chemists with cement plant experience for routine analysis and research; one to direct work in plant control laboratory. Location South Carolina. Reply giving experience and draft status.

**Box 1215, c/o Pit and Quarry**
**538 So. Clark St., Chicago 5, Illinois**

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## CLAMSHELL BUCKET

1—5 yd. Kiesler bucket, Style N, digging or rehandling. NEW 1943. Wt. 11,500 lbs.

### AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

### CRANES AND SHOVELS

1—1¼ yd. Erie gas air Model GA2, Serial No. 9758, with 45′ boom and shovel attachment.
1—1 yd. Marion, indl. 440, Ser. No. 5961, 50′ boom.
1—1 yd. Mdl. 600 P. & H., Serial No. 3502, 40′ boom and backhoe attachment.
1—¾ yd. Conco crane, Ser. No. 1304, fully revolving, power 70 H.P. Continental gas engine, 30′ boom.
1—¾ yd. P. & H. Model 400 crawler crane, Serial No. 4136, with 40′ boom, gasoline powered.
1—½ yd. P. & H. shovel, Model No. 204, Serial No. 2303, gasoline powered.
1—¾ yd. Erie Model B2 crawler crane, steam powered. Serial No. 4027, with 50′ boom and shovel attachment.

### CONVEYORS

1—100′ Stationary troughing type belt conveyor, 16″ wide.
1—30′ Link Belt troughing type portable, 18″ wide.
1—25′ Northern troughing type portable, 18″ wide, with elect. or gas power.

### ELECTRIC CRANE

1—18 ton O. & S. Type B CRANE, mtd. on 8′ 0″ ga. track, 50′ boom. Power 52 H. P. 440/60/3 elect. mtr.

### CRUSHERS

1—9x12″ Rogers jaw crusher (Like New).
1—No. 4 Champion jaw crusher, size 9x15″, Serial No. 2606.
1—No. 2 Climax jaw crusher, size 9x16″.
1—Buchanan jaw crusher, size 10x16″.
1—Acme jaw crusher, Ser. No. 1873, size 12x20″.
1—Acme jaw crusher, Ser. No. 1686, size 9x16″.
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24″.
1—9x12″ Rogers jaw crusher, No. 314. LIKE NEW.
1—10x12″ Colorado Iron Works roll crusher, Laboratory type.
1—Allis Chalmers No. 5 gyratory crusher, Ser. No. 5331, opening 10x38″.
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening 12x35½″.

### DERRICKS

3—Steel Guy Derricks: 1—20 ton American, steel derrick, 110′ mast, 100′ boom. 1—5 ton Terry Guy Derrick, 70′ mast, 60′ boom. 1—5 ton Insley, 75′ mast, 80′ boom. Stiff leg derricks: 1—25 ton Hunter, 40′ mast, 80′ boom. 1—2 ton Pittsburgh, 26′ boom, 15′ mast. Also a number of wood stiff leg derricks, 1 to 5 ton cap.

### HOISTS (Electric, Gas, Steam)

85—Electric, ranging from 20 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes (38 in stock).
Steam, ranging from 8 H.P. to 60 H.P., single, double and triple-drum; all standard makes.

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**EQUIPMENT CORPORATION of AMERICA**

### SHOVELS—CRANES

**Marion 371, 1¾ yd. Shovel, Crane, Dragline**
Bucyrus-Erie 42B Steam shovel-crane
General ½ yd. Diesel crane
P & H 650 shovel-crane
Bucyrus-Erie 20B 1 yd. electric tunnel shovel
Link-Belt K2 Caterpillar Crane, 55″ bm.
Koehring 301 Shovel & Crane, ¾ yd.
Northwest No. 3 Crane, Shovel & Backhoe
Northwest No. 6 Shovel, Crane, Dragline
Browning 10 ton Truck Crane
**P & H 203A, 8 ton Truck Crane**
**Byers Bearcat ⅜ revolving Crane, 5 tons cap.**

### SPECIALS!!

Ingersoll-Rand Model 50 Drill Sharpener
Allis-Chalmers cent. pump, electric, 3500 GPM, 50′
Worthington 8″ cent. bronze impeller, elec. Pump
Rotary Screen 4′x18′ with Bucket Elevator 40′

### BUCKETS—STONE SKIPS

⅞ yd. Blaw-Knox Clamshell, digging
⅞ yd. Hayward Clamshell, digging
Hayward ¾ yd. Standard Orange Peel
⅝ yd. Williams Clamshell, digging
⅝ yd. Haiss Clamshell, digging
½ yard Haiss Clamshell, rehandling
¾ yard Haiss Clamshell, rehandling
Erie ¾ yd. Clamshell, rehandling
20—2½ to 3 yd. Battleship type Steel Stone Skips

### TRACTORS—BULLDOZERS

D7 caterpillar tractor with bulldozer
Cat. D4 tractor with angledozer
Allis-Chalmers HD10 with bulldozer
Int. TD35 with bulldozer
Int. TD14 with bulldozer, rebuilt

### CRUSHERS—CRUSHER PLANTS

Gyratory Crushers: K.V.S. 30, 49; Traylor 8″, 10″, 12″, 14″, McCully 13″, 8″, 6″.
Jaw: 10x22, 10x24, 10x30, 11x18, 11x21, 12x22, 12x24, 14x24, 14x25, 15x32, 16x32, 16x38

### LOCOMOTIVES—CARS

American 60 ton, steam, std. ga.
American 45 ton, Saddle Tank
Plymouth 35 ton, std. gauge gas
Plymouth 30 ton standard gauge Saddle Tank
Baldwin 20 ton, 36″ gauge, Saddle Tank
Vulcan 30 ton Steam, Saddle Tank
Whitcomb 14 ton, Diesel, 36″ gauge
Porter 13 ton, Steam Saddle Tank, 36″ gauge
Baldwin Westinghouse 8 ton, 36″ ga. Battery
Vulcan 6 ton, 36″ gauge, gas
3—Western Steel 20 yard Air Dump Cars
3—30 ton Standard Gauge Flat Cars, rebuilt

### CONCRETE PLANT & EQUIPMENT

**2—Ransome 288 Mixers on skids, left and right hand**
Koehring 34E Dual Drum Power
Fuller Kinyon Bulk cement unloader
Pauers—27E—2 Koehring, 1 Multi-Foote 1 Rex
Rex Pumperete Models 160, 180, 190 and 200
Finishing machines from 10′ up to 32 ft.

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30 Church St. New York, N. Y.

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**5 CU. YD., GAS DRIVEN**

| Serial No. | Rubber |
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| D-418 | New Front and Rear |
| D-722 | Used Front and Rear |
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Price for lot of three units, with one complete new clutch and one complete new transmission (less housing), $9,000.00.

Used rubber on jobs is fair to good. Units have been overhauled in our shops and we consider them in good serviceable condition.

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NEW BRAUNFELS TEXAS

## PRICED RIGHT

1—Fuller Kinyon Type C Portable Transport Pump for unloading dry pulverized materials from box cars, bins, etc., 12 to 15 ton per hour, motor driven.
1—Vulcan 6′x42′ Rotary Dryer, ½″ shell, located West Coast.
1—Vulcan 6′x60′ Rotary Kiln and 4′x35′ Rotary Cooler.
1—Set of 18″x10″ Crushing Rolls.
1—Blake Jaw Crusher, 9″x14″.
1—Oliver Rotary Continuous Filter, 5′x8′.
10—Bucket Elevators 20′ to 75′.
8—Belt Conveyors, 20′ to 50′.
5—Tyler Screens, 3′x5′, 4′x5′.
1—Jeffrey Hammer Mill 24″x18″.

*Partial List Only*

WANTED: Crushers, Dryers, Pulverizer, etc. Send us your list

**BRILL Equipment Co.**
225 WEST 34th STREET, NEW YORK 1, N.Y.

## TVA DRILLING EQUIPMENT

I have purchased the large lot of splendid drifter drills, jack-hammers, jack-bits, etc., at Apalachia Dam, Tenn., TVA bought most of this equipment in 1942 and 1943 and has kept it in excellent condition. Will offer this virtually new equipment at approximately half price, and will ship subject to your approval upon arrival and before payment.

60 IR drifter drills, DA-35 & IR 35; centralizers and automatic power feed.
13 GD paving breakers, B72-H.
2 Sullivan paving breakers, K-7.
3 IR Jack-hammer drills, Model S-68.
2 GD jack-hammer drills, Model S-55.
2 IR Wagon drills, Model X-71 Tubular steel mounting; pneumatic tires.
37,000 IR detachable jack-bits, Type 2, 4 point; side hole; sizes 1 11/16 to 2½″. Detailed list on request.

ALSO

400 tons structural steel at Douglas dam, nearby. This includes 18″ and 36″ std I beams and 14″ to 21″ H columns, 4x6 and 6x8″ angles; all long lengths.
800 gallons "Bitu-Preservo" black enamel steel preserving paint in 55 gal. steel drums with "E-Z seal" tops. Made by Pittsburgh Plate Glass Co.
300 lbs. Rock cork asphalt; Johns-Manville Co.
2 Page dragline buckets; ¾ yd. & 2 yd.
23′ dia. lifting magnet; 210 volts A.C.
54″ x 22″ single roll Ocola knob roll crusher. 4 extra rolls.
4 Brooks 2 yd. Loadluggers, Model CH 200, with 90 buckets; 4—1½ yd. with 160 buckets.
Clutch pulley, 6 ft. dia. x 29″ face.

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BARBER-GREENE, portable dual drum sand dryer on pneumatics with elevator and feeder — Excellent condition — used very little.

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One No. 33 Ingersoll-Rand Leyner Jacksteel Drill Sharpener. Serial No. 2842 taken out of service and replaced with a larger machine, in good operating condition. Reply to:

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For Sale—One P&H ditching machine, Serial No. 1064, Type 105 K.C. Wheel Type. $2850.00. One Paige bucket 2¼ yard $195.00.

All material in first class shape.

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2—4 roll HIGH SIDE MILLS COMPLETE, FOR EXTREMELY FINE PRODUCTS.

1—4 roll HIGH SIDE MILL, EQUIPPED WITH WHIZZER SEPARATOR AND LATEST OIL TYPE JOURNALS.

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1—30"x640' c/c, complete, ball bearing idlers, gear reducer, 30 H.P. motor, etc.

1—30"x120' Rex-Stearns, ball bearing idlers, complete but without belt.

### OLIVER CONTINUOUS FILTERS

1—8'x8' rebuilt, with new wood staves, wood grids and new internal piping.

2—8'x10' with wood staves, steel trough.

2—8'x12' all steel, complete with pumps and receivers.

### SYMONS CONE CRUSHER

1—3 ft. with coarse bowl, spare parts.

### HARDINGE CONICAL BALL AND PEBBLE MILLS

1—5'x22", iron lined, silent chain drive

1—6'x36", silex lined, silent chain drive and motor.

2—8'x30", silex lined, belt driven.

### CRUSHING ROLLS

1—24"x40" Pennsylvania Single Roll Crusher, flat belt drive.

2—40" dia. x 16" Colorado Iron Works, smooth rolls, equipped with fleeting device.

### DORR CLASSIFIERS AND THICKENERS

3—Dorr Combination Bowl and Rake Classifiers;
10' dia. with 2'3" x 19'8" rake
12' dia. with 2'3" x 21'4" rake
15' dia. with 2'3" x 23' rake

### DIRECT HEAT ROTARY DRYERS

2—4'x30' Ruggles-Coles single shell. Can also be used as Rotary Kilns.

2—5'x40'

1—6'x24' Cummer, mounted on steel I-beam frame, with furnace, etc.

2—6'x30' Ruggles-Coles, double shell.

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STEEL TANK ON TOWER 22,000 gal. capacity on 50' tower

2—100-ton Watson-Stillman Hydraulic Jacks

4 New Gyroset Vibrating Screens. Screening Surface 24 x 48"

All types conveying equipment built to specifications

ELECTRIC MOTORS — up to 100 HP

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## LOCOMOTIVES SHOVELS CRANES CARS

1—42½ ton Porter 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, entire new firebox, rebuilt.

1—26 ton American 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, thoroughly overhauled.

1—72½ ton Baldwin 0-6-0 separate tender switcher, full time I.I.C. papers, overhauled.

1—Whitcomb diesel locomotive, 36" gauge, with Caterpillar V-8 engine, air brakes, electric lights. This locomotive built in 1936 and has now been put in first class serviceable condition with new wheels, chains, sprockets, reversing gear, and bronze clutch plates. Weight is 20 tons in full working order.

5—Western 30 yard two way air operated side dump cars, standard gauge, **DROP DOOR TYPE,** first class condition.

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Birmingham 1, Alabama

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50x24 Champion Jaw Crusher
36x24 Farrel Jaw Crusher
36x18 Farrel Jaw Crusher
36x15 Universal Overhead Eccentric Jaw Crusher
18x9 Climax Jaw Crusher
16x8 Climax Jaw Crusher
24x12 Champion Jaw Crusher
#13A Telsmith Primary Gyratory Crusher
#38 Kennedy Reduction Crusher with 75 HP Synchronous Motor built in flywheel
3-Brand new Worm Washers, 14' long, 30' diameter
10'x5' Niagara single deck Vibrator
12'x4' Telsmith double deck Vibrator
12'x3' Symons double deck Vibrator
8'x3' Symons double deck Vibrator
25'x5' Traylor heavy duty Revolving
18'x4' Telsmith Ajax Revolving
Double drum Novo Hoist with 4 cylinder Novo gasoline engine directly connected on heavy cast iron base
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Model 82 Barber Greene Bucket Loader on caterpilar with 4 cylinder Buda Engine with self starter
1—1¾ yd. shovel bucket, manganese heavy duty
1—1¼ yd. Clamshell material handling Bucket

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1 ¼ yd. Lorain Crane, 45 ft. boom 1¼ yd. Shovel Att.—Pull shovel Att.
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20 KW and 30 KW. Int. & Cat. diesel electric sets.
1 Yd. Link Belt K-30 gas shovel.
14 ton Whitcomb Loco-Gas—36 Ga.
20 ton Plymouth Loco-Gas—Std. Ga.
27—E. Smith Paver, Model H-31.
5—Electric Hoists, 40, 50 and 60 HP.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
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Shovel Attachment for 41B Bucyrus-Erie.

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Austin Gyratory Crusher No. 107.

Buchanan Crusher, 12" x 36" Type B Jaw Crusher.

Allis-Chalmers Double Roll Crusher, Garfield Type, Size 54" x 20", with new Manganese Roll Shells.

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Tyler Type 31 Tandem Hummer Screen 8' x 5', 3 surface with G.E. Type G2 Motor Generator Set.

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3—Duplicate **VULCAN** 21 ton, 36" Ga. steam saddle tank locomotives, Cy. 11"x16"—Nat'l Board boilers. blt. 1923

1—45 ton **BALDWIN** 2-6-2 Prairie type, std. ga. loco. & tender.

1—56 ton **BALDWIN** 0-6-0 std. ga. switcher type with separate tender. 19"x24" cy.

10—36" ga. **WESTERN** 5 yd. dump cars.

10—Std. ga. **WESTERN** 12 yard dump cars, all steel, hand dumps.

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3—Model 119-L **BUDA** motor section cars, Buda air cooled motor.

1—**BLAW-KNOX** 1½ yd. clam shell.

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1—28" x 36" Webb City Iron Wks. Roller Brg. Jaw Crusher with 75 HP 860 RPM 440 V West. type C. W. var. spd. motor, V-Belt Drive.
1—18" x 30" Telsmith Wheeling Roller Brg. with 50 HP 440 V West. type C. W. var. spd motor, and V-Belt Drive.
1—36" Telsmith gyrosphere with 60 HP West. type C. W. var. spd. motor, 440 V V-Belt Drive.
1—20" Traylor type TY secondary red. with 25 HP 440 V motor.
1—9" x 15" Traylor Chalmers Blake type with 15 HP motor.

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1—3' x 8' Symons S. D. Vibrating Screen, Model JK3-4, V-belt drive to 7½ HP, U. S. BB motor.
1—5' x 4' Leahy S. D. Vibrating Screen, with 1 HP, 1160 RPM motor and drive.
1—3' x 4' Symons D.D. Vibrating Screen, Model JW 7-2, with 5 HP, 1800 RPM, U. S. BB motor and drive.

**CONVEYORS**

1—30" Conv. Belt 55' center with Thr. Rolls, idlers, Hd. and T. Pulleys, 7½ HP gearmotor and drive.
1—20"-160' centers with Belt, Thr. Rolls, idlers, Hd. and T. Pulleys, spur gear red. 10 HP motor and V-Belt Drive.
1—16"-48' centers, Stacker conveyor on steel frame with Thr. Rolls, idlers, Hd. and T. Pulleys, 3 HP gearhead motor. V-Belt Drive.
Also large stock Air Compressors, Motors, Transformers, Drills, Drill Steel, etc.

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6 x 6 x 7/8"
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Lengths 30' to 50'

**E. COHN & SONS**
**CEDAR RAPIDS, IOWA**

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1 Pioneer trencher
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3 Cleveland Model 95 trenchers
3 Cleveland 110 trenchers
1 Austin trencher—will dig 18' deep, 36" wide
1 Buckeye 12
1 Caterpillar Sideboom Model 30
2 Caterpillar Sideboom Model 20, 28
2 RD-4 Caterpillar Sideboom
2 RD-4 Caterpillar Angledozers
1 RD-6 Caterpillar Angledozer
AIR COMPRESSORS, PORTABLE, ALL SIZES
1 Cleveland combination Tamper and Backfiller
1 locomotive, 100 ton, good condition
1 Marion 4 yd. shovel, electric
1 Browning ½ yd. crane, backhoe
1 Koehring shovel, crane, Model 301
1 HD-10 Allis Chalmers bulldozer

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**90, Refrigerator, 40-Ft., 40-Ton**
**16, Refrigerator, 36-Ft., 30-Ton**
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**3, Dump, Koppel Automatic, 30-Yd., 50-Ton**
**1, Dump, Koppel, Automatic, 20-Yd., 40-Ton, Drop-side Door**
**3, Dump, Western, 20-Yd., 40 & 50-Ton**
**20, Flat, 40-Ft., 40 & 50-Ton**
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No. 9 Allis-Chalmers Style K Crusher in good shape.
3 yard friction hoist, complete with electric motor and V-belt drive.

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Liquidating Red Granite Quarry at Lohrville, Wisconsin; 1 guy derrick with electric hoist; 3 Gyratory crushers; 1 Symons horizontal disc crusher; 1 Allis-Chalmers revolving screen; 1—11,000 gallon oil tank; grout cars and numerous other items; complete inventory on request.

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**KLATZKY BROTHERS**
Calumet Michigan

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**PRICED TO SELL AT ONCE — JUST OVERHAULED**

P&H 600 Crawler Gas Combination Shovel, Crane and Dragline, one yard.
2 Barber-Greene Model 42 Disc Type Bucket Loaders.
20-B Bucyrus Crawler Gas Crane and Dragline, ¾ yard.
Orton Crawler Gas Full Revolving Crane with ½-yard bucket.

All the above first-class condition, immediate delivery.

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FOR SALE: 100-ton, Strait Railroad Track Scale, 50' length Type Registering Beam, beam box, 20" I beams for weighbridge; without dead rail: completely overhauled.

**The L. L. Perry Scale and Repair Company,**
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200 HP Cummins Supercharged Diesel Engine.
120 HP Anderson 480 Volt Diesel Gen. Set.
125 HP Venn Severin Diesel, Factory Rebuilt.
16" x 24' Jeffrey Port Conveyor, Gas Drive.
No 0 Cedar Rapids Kubit Impact Breaker.
Traylor 36" Type TZ Gyratory Crusher.
Williams 4 roller Mill, complete.
Hardinge 16" x 6' Conical Ball Mill, steel balls.
21 x 42" McLanahan Single Roll Crusher
Barber Green Model 42 Gas Crawler Loader.
Two Waukesha Nat Gas Engines 42 & 57, 6 HP.
50 HP Nat'l Drag Scraper Outfit. Gas drive.
2 yard Page Walker Dragline 60' boom, D esel
Louisville Dryer 54" dia. x 40' long Monel Lined
Belt & Bucket Elevator 60' Centers Bkts. 11½x7".
36 x 42" Traylor Jaw Crushers with Motor
17 x 36" Pioneer Roller Bearing Jaw Crusher.
20 x 20" Diamond double smooth roll Crusher

**MID-CONTINENT EQUIPMENT CO.**
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## CRUSHER — ELEVATORS — SCREENS — CONVEYORS

1—RELIANCE 8" x 14" Portable Jaw Crusher
1—New 9" x 15" BEAUMONT Jaw Crusher
2—Used 9" x 15" CHAMPION Jaw Crushers
1—10" x 20" CHAMPION Jaw Crusher
1—12" x 20" BUCHANAN Jaw Crusher
3—12" x 26" CHAMPION Jaw Crushers
1—#1030 CHAMPION Roller Bearing Crusher
1—4½" TRAYLOR Gyratory Crusher
1—#2F TELSMITH Gyratory Crusher
2—NEW Small Hammer Mills

**JOHNSON & HOEHLER, INC.**
**Lansdowne, Pa.**

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## FOR SALE

Pulverizer air swept mill complete with fan, cyclone collector & piping. (Fuller Lehigh Mill). No elevator or conveyor needed. Bargain for anyone wanting to do fine grinding.

4 Deck 4' x 8' Vibrating Screen
4 Side Bottom Dump Lime Cars, 24" Gauge
1 Pair of track scales with automatic weight recorder. Ideal for Quarry Car weighing & recording.

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Plymouth Meeting Pennsylvania

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**GENERAL COMPRESSOR & TOOL CO.**

**186 Grand Street**
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***Large stock of new and used Ingersoll-Rand air compressor equipment.***

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**ALL SIZES for ALL PURPOSES**
**Cut and Threaded to Your Specifications**
**VALVES AND FITTINGS**
**UNITED PIPE & SUPPLY CO., NORRISTOWN, PA.**

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1—Austin-Western 4 x 40 Jaw Crusher, New Roller Bearings

1—Farrel-Bacon 18 x 36 Jaw Crusher

2—1½ yard Dempster Dumptors Model LF, ready for mounting on trucks with buckets

1—1½ yard Brooks Load Lugger with buckets

1—Iowa Model KD 9 x 16 Portable Jaw Crusher with Model 20 International Power Unit, all mounted on four pneumatic tires, self propelled.

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**OF**
# RUBBER PRODUCTS

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THE RUBBER HEADQUARTERS

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| Width | Ply | Top-Bottom | Covers | Width | Ply | Top-Bottom | Covers |
|---|---|---|---|---|---|---|---|
| 48" | 8 | 1/8" | 1/16" | 20" | 5 | 1/8" | 1/32" |
| 42" | 5 | 1/8" | 1/16" | 20" | 4 | 1/8" | 1/32" |
| 36" | 6 | 1/8" | 1/16" | 18" | 4 | 1/8" | 1/32" |
| 30" | 6 | 1/8" | 1/16" | 16" | 4 | 1/8" | 1/32" |
| 30" | 5 | 1/8" | 1/16" | 14" | 4 | 1/16" | 1/32" |
| 24" | 5 | 1/8" | 1/32" | 12" | 4 | 1/16" | 1/32" |
| 24" | 4 | 1/8" | 1/32" | | | | |

*Inquire For Prices - Mention Size and Lengths*

## TRANSMISSION BELTING

**HEAVY-DUTY FRICTION SURFACE**

| Width | Ply | Width | Ply | Width | Ply |
|---|---|---|---|---|---|
| 18" | 6 | 10" | 6 | 6" | 5 |
| 16" | 6 | 10" | 5 | 5" | 5 |
| 14" | 6 | 8" | 6 | 4" | 5 |
| 12" | 6 | 8" | 5 | 4" | 4 |
| 12" | 5 | 6" | 6 | 3" | 4 |

*Inquire For Prices - Mention Size and Lengths*

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**EACH LENGTH WITH COUPLINGS ATTACHED**

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| | 25 " | 16.00 |
| 2" | 50 " | 23.00 |
| | 25 " | 13.00 |
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| | 25 " | 11.00 |

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|---|---|---|
| ¾" | 25 feet | $4.25 |
| 1" | 50 " | 8.00 |
| | 25 " | 6.25 |
| 1¼" | 50 " | 12.00 |
| | 25 " | 7.50 |
| | 35 " | 10.50 |
| | 40 " | 12.00 |
| 1½" | 50 " | 15.00 |
| | 25 " | 10.00 |
| | 35 " | 14.00 |
| | 50 " | 20.00 |

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| I.D. Size | Length | per Length | Couplings |
|---|---|---|---|
| ½" | 25 feet | $5.00 | $1.50 Pair |
| | 50 " | 10.00 | 1.50 " |
| ¾" | 25 " | 6.25 | 2.50 " |
| | 50 " | 12.50 | 2.50 " |
| 1" | 25 " | 10.00 | 3.50 " |
| | 50 " | 20.00 | 3.50 " |

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**Immediate Shipment**

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2 heavy, C. I. pulleys, 84" x 23".
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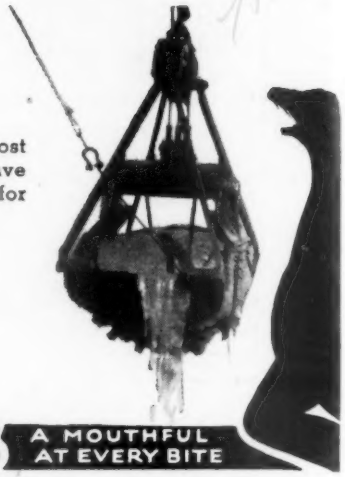

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